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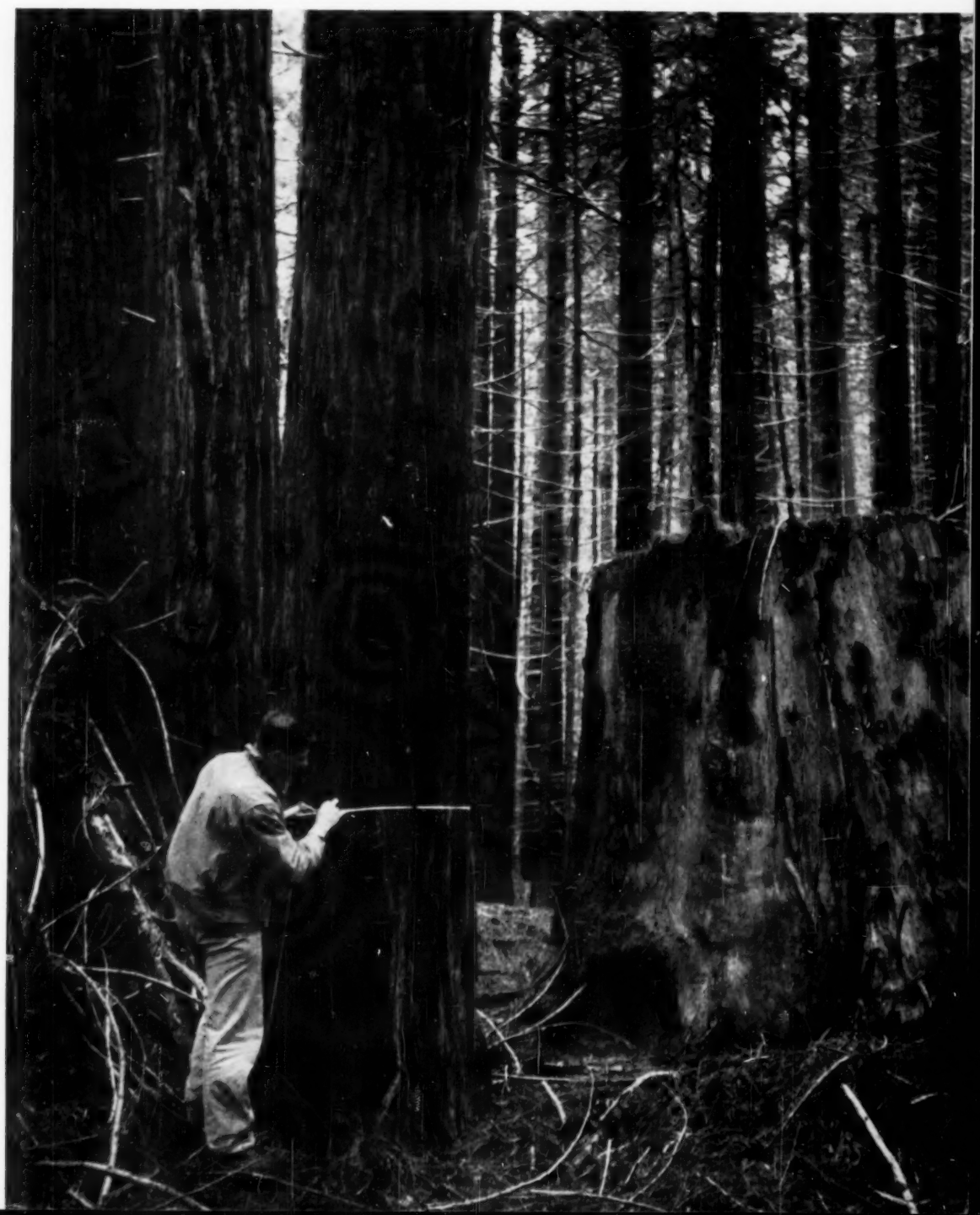
JANUARY 1956



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Volume 54
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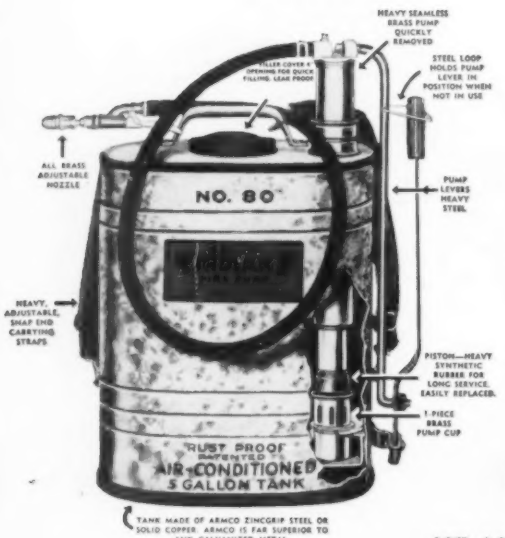
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Photo courtesy Hammon, Jensen & Wallen

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JAMES W. CRAIG

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Forestry Suppliers is very pleased to announce that James W. Craig will return to the company as manager of the Consulting Division. Four years ago Mr. Craig was appointed State Forester of Mississippi at which time his private business activity of consulting and supply was incorporated as Forestry Suppliers, Inc. with Ben C. Meadows as President and manager. This business has operated under a board of directors made up of stock-holding foresters with Mr. Craig as chairman of the Board.

After serving the people of Mississippi for four years as their State Forester Mr. Craig is returning to private business to further promote the growth that Forestry Suppliers has made since its inception in Jan. 1952.

As manager of the Consulting Division Mr. Craig will direct the ever-growing part of the business. Expert services in this Division will be made available not only to private land owners but to the rapidly expanding pulp and paper industry in the South and the very important sawmill industry.

The supply division and the newly created Yard and Garden retail outlet will remain under the supervision of Ben C. Meadows, President of the parent Corporation, Forestry Suppliers, Inc.

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Journal of Forestry

Official Organ of the Society of American Foresters

DeWitt Nelson, George A. Garratt Elected S.A.F. President, Vice President

New Council, Fellows Named

Dewitt Nelson of Sacramento, Calif. was elected December 3 as president of the Society of American Foresters by mail ballot of the members for the two-year term 1956-1957. He succeeds Elwood L. Demmon, of Asheville, N. C. who was not a candidate for reelection.

Mr. Nelson, who is director of the California Department of Natural Resources, was vice president of the Society during the biennium 1954-1955. A forestry graduate of Iowa State College in 1925, Mr. Nelson was for twenty years with the U. S. Forest Service in California, starting as a timber scaler and working up to the rank of supervisor of the Shasta, Tahoe, and San Bernardino National Forests. In 1944 he was appointed deputy director of the California Department of Natural Resources; in the following year he became state forester and was promoted to his present position in 1953.

George A. Garratt of New Haven , Conn., dean of the Yale School of Forestry, was elected vice president of the Society. With forestry degrees from Michigan State University and Yale, Dr. Garratt has been in forestry education for the past thirty-five years, first at Michigan State, then at the University of the South (Tenn.), and at Yale since 1925. He has been dean of the Yale School of Forestry, the oldest forestry school in the Western Hemisphere, since 1945. He is the author of two books and numerous technical bulletins and papers on forestry and forest products.

Council Members

Organized in 1900, the Society of American Foresters with headquarters in Washington, D. C. has a membership of almost 11,000 professional foresters practicing in the United States and Canada. Its governing body is the Council composed of the president, vice president, and nine additional members. The following foresters were elected to the Council for two-year terms 1956-1957:

B. E. Allen, assistant manager of woodlands, Union Bag & Paper Corporation, Savannah, Ga.

Philip A. Briegleb, director of the Southern Forest Experiment Station, operated by the Forest Service, U. S. Department of Agriculture, at New Orleans, La.

C. Huxley Coulter, state forester, Florida Forest Service, Tallahassee, Fla., for a second consecutive term.

Stanley G. Fontanna, dean of the School of Natural Resources, University of Michigan, Ann Arbor, Mich., for a second consecutive term.

Maurice K. Goddard, secretary of the Pennsylvania Department of Forests and Waters, Harrisburg, Pa.

Edwin F. Heacox, managing forester for the Weyerhaeuser Timber Company, Tacoma, Wash., for a second consecutive term.

Joseph S. Illick, dean emeritus of the College of Forestry, State University of New York, Syracuse, N. Y., for a second consecutive term.

J. Herbert Stone, regional forester of the U. S. Forest Service, Portland, Ore., for a second consecutive term.

Henry J. Vaux, dean of the School of Forestry, University of California, Berkeley, Calif.

Fellows Elected

In addition to the foregoing officers, the following nine Fellows were elected. Election to the grade of Fellow is conferred only for outstanding achievement in forestry.

Reed W. Bailey, director of the Intermountain Forest and Range Experiment Station, Ogden, Utah.

John S. Boyce, professor (retired) of forest pathology, Yale University School of Forestry, New Haven, Conn.

Dwight B. Demeritt, vice president of the Dead River Company and of the Eastern Corporation, Bangor, Maine.

Samuel B. Detwiler, chief (retired) of hill culture research, Soil Conservation Service, Boulder, Colo.

Stanley G. Fontanna, dean of the School of Natural Resources, University of Michigan, Ann Arbor, Mich.

J. Alfred Hall, director of the Forest Products Laboratory, Madison, Wis.

Frank H. Kaufert, director of the School of Forestry, University of Minnesota, St. Paul, Minn.

Frederick P. Keen, special assistant in the Division of Forest Insect Research, U. S. Forest Service, Berkeley, Calif.

Gordon D. Marckworth, dean of the College of Forestry, University of Washington, Seattle, Wash.

Elected For 1956-1957

Society of American Foresters

President

DEWITT NELSON. Director, Dept. of Natural Resources. Sacramento, Calif.

Vice President

GEORGE A. GARRATT. Dean, School of Forestry, Yale University, New Haven, Conn.

Council Members

B. E. ALLEN. Assistant manager, Woodlands Division, Union Bag & Paper Corporation, Savannah, Ga.

PHILIP A. BRIEGLEB. Director, Southern Forest Experiment Station, New Orleans, La.

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J. HERBERT STONE. Regional forester, U. S. Forest Service, Portland, Ore.

HENRY J. VAUX. Dean, School of Forestry, University of California, Berkeley, Calif.

The 55th Annual Meeting

THE rich and colorful land of the Pacific Northwest was the scene of the 55th annual meeting of the Society of American Foresters. Held last October 17-19 in Portland, Ore., the event attracted 1,147 men and 270 ladies, thereby becoming the largest annual meeting in the Society's history. Members were present from 39 states, the District of Columbia, and Alaska. Fourteen persons were in attendance from Canada and 5 from foreign countries. An air of vitality, of interest, and of progress invaded every meeting room, colored every hotel lobby conversation.

The three days of conferences that comprised the general session, the Society Affairs session, and 11 technical sessions were preceded by a day of related meetings and followed by two days of field trips. Various alumni gatherings were held as opportunity permitted.

On October 16 the Council of the Society was in session and meetings were held by the Council of Forestry School Executives, the Committee for the Advancement of Forestry Education, the Association of Consulting Foresters, Xi Sigma Pi, and the editorial board of the JOURNAL OF FORESTRY. An afternoon field trip to the Portland City Forest ended with a tea and reception at the Gallery of Trees, the world's largest log building. During the evening the Council met with delegates of the 21 Sections.

The General Session

With a theme of "Converting the Old Growth Forest," the opening general session got under way before a capacity audience. President Henry Schmitz of the University of Washington presided. Arthur W. Greeley, U. S. Forest Service regional forester, Juneau, Alaska, spoke on "Preserving the Public's Interest in Converting the Old Forest to New." E. P. Stamm, vice president of Crown Zellerbach Corp., discussed "Managing the Forest in the Conversion Process, With Particular Reference to Road Development." DeWitt Nelson, director, California Department of Natural Resources, reviewed the problems of "Protecting the Resource in Converting the Old Forest to New."

Timber Resource Review

Opening the afternoon portion of the day's program, Forest Service Chief R. E. McArdle presented a summary of the findings and conclusions of the Timber Resource Review, the first public discussion by the Service after completion of the three-year study. The time of his report to the gathering of professional foresters coincided with public release of the preliminary draft of the Review.

Society Affairs

At the Society's annual business session President E. L. Demmon presided. His annual report is presented elsewhere in this issue, as are all other reports given at the session. Vice President DeWitt Nelson, speaking on behalf of the entire membership, expressed appreciation to President Demmon for his services to the Society during his term as president (for which position he did not seek renomination) and his prior services as vice president and Council member.

Division Meetings

The 11 subject Divisions each held one or more technical sessions, all of which were well attended. The Divisions of Education, Range Management, and Private Forestry met on the evening of October 17. On the following day an all day session was held by the Division of Silviculture, half day sessions by the Divisions of Public Relations, Forest Recreation, Forest Products, and Forest - Wildlife Management. On October 19 an all day session was held by the Division of Forest Management, half day sessions by the Division of Forest Economics and Policy and the Division of Watershed Management.

Field Trips

Two days were devoted to well organized field trips, following completion of the technical sessions. Four all day trips were offered: an Industrial Tree Farm Tour of Crown Zellerbach Corp. lands and operations; a visit to the famous Tillamook Burn; a tour of the Mount Hood National Forest; another devoted to forest industries of Longview, Wash., including plants of the Weyerhaeuser Timber Co., Long-Bell Lumber Co., and the Longview Fibre Co.

Social Events

An over-flow crowd of 1,100 attended a fruits-of-the-land barbecue and social evening at Oaks Park on October 18, arranged by the Columbia River and Puget Sound Sections.

On the following evening the Society dinner was preceded by a social hour through the courtesy of the equipment companies. Robert W. Cowlin served as toastmaster for the banquet at which Bernard L. Orell delivered an interesting and inspiring address. A "distinguished European forester" dispersed words of international wisdom to his colleagues, generously spiced with wit. It was not until he was subsequently introduced as a prominent Northwest civic leader that many in his audience of 855 realized they had been thoroughly hoodwinked.

Ladies Activities

Special ladies' activities were numerous and were highlighted by a forum under the direction of Dean W. F. McCulloch of Oregon State College School of Forestry, who was also chairman of the Program Committee for the entire meeting.

Appreciation

General Program Chairman J. Herbert Stone and his staff of committee members and workers are highly commended by all in attendance for their energetic efforts that resulted in one of the Society's finest annual meetings.

A Site Evaluation Concept[1]

Svend O. Heiberg and Donald P. White
Professor and assistant professor, Department of Silviculture, State Univ. of N. Y., College of Forestry, Syracuse

There is a current trend among many foresters concerned with site relationships to seek more precise methods for evaluating growth potential. Frequently the approach to this problem has been to reduce observations to single factor measurements related by formulae to site-index ratings or other expressions of growth. The authors emphasize consideration of all the effective factors which influence production throughout the life of the stand. The dynamic rather than the static nature of site quality is stressed. The concept of current site index will be new to many readers.

SITE is a well established concept among American foresters. The wording of the definition of site has varied over the years. But the concept—in contrast to several other silvical concepts—has remained undisputed and well understood.

Perhaps the most commonly used definition is the one proposed by Tansley (*17*) and accepted and restated by Toumey (*18*) and subsequently reprinted unchanged by Toumey and Korstian (*19, 20*). Tansley defines habitat, which is the ecologist's equivalent to site, as "the sum of the effective conditions under which the plant or (plant) community lives."

Emphasis is here rightly placed upon the effective conditions, namely those factors that in some manner support and influence the vegetation. But what are these effective factors, and how can they be measured accurately? That is still the big question in site evaluation.

Approaches to Site Evaluation

Site quality can be evaluated in three ways:

1. Directly in terms of quality and magnitude of the various site factors such as light and temperature that influence the vegetation in question.

2. Indirectly in terms of some measurable index that reflects the quality or magnitude of the site factors or the vegetation itself. Soil and vegetation types are examples of this approach.

3. In terms of actual production of the vegetation in question, such as volume and height growth.

Forest growth always reflects the response to a combination of factors. Perhaps at a certain place and for a certain time one or more factors is by far the most influential or limiting. The relative impact of these important factors may change, and do frequently change in relatively short periods of time and other factors then become the most influential.

The Direct Approach

Direct measurements of site factors are very difficult in practical forestry. However, under given conditions, a reasonably good correlation may be found for a given site factor or group of site factors and a given species. Thus increasing amounts of available soil moisture usually result in additional supply of soil nutrients, longer periods of open stomata and therefore greater photosynthetic activity. Available soil moisture is therefore often a most important site factor. Unfortunately the measurement of available soil moisture is still a difficult and laborious task and even present day techniques cannot conveniently and accurately measure available soil moisture in the forest. The same holds true for most other soil factors. For example, the total amount of essential plant nutrients in the soil can be determined accurately but the precise amount that is readily available for absorption by the plant roots is difficult to measure.

The Indirect Approach

Physical properties.—The indirect approach, on the other hand, has been found far easier and for practical purposes much more promising. For example, annual or seasonal precipitation is an indirect measure of soil moisture, allowing of course for terrain and special soil conditions. Likewise, Auten (*2*), Coile (*5*) and others (*1, 7, 24*) have shown the thickness of the solum or a part of the solum to be a good guide to site quality in areas where soil moisture is a dominant growth factor. This is natural because the solum or depth of soil down to parent material is an indicator of the volume of soil and therefore soil moisture and nutrients—available to the plant roots. The A horizon is the part of soil profile in which the greatest root concentration generally is found. Deeper A horizons are therefore usually correlated with the better sites. Most routine soil testing for fertility levels is logically confined to samples from this horizon. In addition, allowances for topographic position and evaluation of properties of the subsoil that affect water movement, availability of water and nutrients, porosity and aeration add to the reliability of a site index based on soil factors.

Nutrients.—Where a particular single soil nutrient is known to be deficient, foliar analysis appears to be more reliable than direct soil analysis. The foliar analysis method has the advantage in that it reflects what the tree in question is able to absorb from the soil far better than existing soil analytical technique is able to do. Comparing such analysis with nutrient levels established from normal trees will give relative indexes as to the degree of deficiency (*8, 15, 21*).

Indexes of the latter type cannot perhaps, in the ordinary sense, be classed as indexes of site quality. Yet where and when such deficiency conditions exist, a reliable measure of the magnitude of the deficient element is a better estimate of current site quality than

[1]Originally presented before New England Section, S.A.F., Boston, March 1954.

measurement of any other of the site factors.

Topography.—Relative altitude, or rather topographic position, in relation to other areas within a general broad climatic and edaphic region, can give another indirect measure of site quality. Altitude in itself is not a direct site factor but reflects temperature and moisture relations. To apply such an indirect index usually requires an allowance for soil conditions and aspect (*4, 7*).

Vegetation.—The lesser vegetation—the ground vegetation—of forest areas is also used as an indicator of site quality (*3, 9, 10, 22*). Inasmuch as the root depth of the ground vegetation and the trees seldom is the same, and their relation to site factors also may differ, ground vegetation cannot be expected completely to reflect site productivity for trees.

However, ground-cover types reflect temporary site changes that are not as easily recognizable and measured on the trees. These types are sometimes divided into basic or fundamental types reflecting the climax site quality and temporary types reflecting site changes due to such influences as cutting, fire, grazing, etc., that for a more or less prolonged period will influence the site quality.

Ground-cover types compared with many other site indicators have the advantage that they, like the forest trees themselves, are reflecting a number of site factors. The relative ease of observation of this approach is more than offset by the difficulty of working out the relationships involved. In addition the complicating effects of stand disturbance are difficult and sometimes impossible to interpret fully on the ground by the average forester.

The examples mentioned serve to illustrate: That indirect measurements of the effect of site factors are easier to make and apply than direct measurements of the factors themselves. That such indirect site factor indicators usually reflect the effect of a combination of factors rather than the effect of only one factor. And that the reliability of this approach is considerably improved by allowing for special local conditions. It is, furthermore, most significant that so far no index of this kind has been presented that includes the sum of all the effective conditions that influence the plant or plant community in question.

Site in Terms of Growth

Volume.—The logical approach to evaluating site quality in terms of actual production of the vegetation in question would be to express this yield in terms of volume produced per unit area. This could be in board feet or cubic feet producible per acre and year. Although within certain wide limits the volume increment appears not to be influenced by density of stocking for a given site, type and age (*11*), our utilization standards and rotations vary so much that site qualities expressed in annual volume production are likely to be misleading rather than informative. Instead also here an easily measurable indication of production has been found preferable.

Height.—A site indicator generally accepted throughout the world is height of the leading trees related to age. This concept is valid in spite of the fact that tree volume is the product of height, basal area, and a form factor. However, investigations have shown that basal area increment and form factor are only slightly influenced by site quality (*6, 23*). There is therefore a close relationship between height and volume increment.

During the early years of a stand, height growth is usually greatly influenced by factors of establishment. Competition with weeds, heavy shading, frost injury, and planting technique are often dominating factors during this early period. Later in the life of a stand, wind effect may be extremely important depending on the position of the stand in relation to adjacent stands. This wind effect may not only influence the evaporation and thus the photosynthetic activity of the crowns but also the evaporation from the soil and thus also indirectly the microorganisms of the soil, the condition of the humus, the physical conditions of the soil, available soil moisture, and ultimately the effective soil volume.

A realistic approach to site index as measured by tree height over age must take such stand establishment influences into consideration. Corrections for adverse effects during the establishment period are relatively easy to make by determining age at breast height and correcting to a "normal" age for this or any other predetermined height.

Current site index.—Likewise the actual or current site index is the quality of the site as expressed in current height growth of a given stand and at any given time. This index may be of far more interest to a forest manager than a site index that reflects the growth throughout the life of the stand and which leads to an interpolated current production often quite different from the current actual production.

Evaluation of site is primarily used to determine growth expectation. What a stand is most likely to produce during the next five, ten, or twenty years is often of far greater importance to forest management than what it may produce throughout its life.

The current actual site index can fairly easily be determined in connection with a cutting operation by measuring current height growth of the leading trees and fitting the curve of these values to the orthodox site index curves in use (*12*).

It should also be pointed out in this connection that most of our existing site index curves have been constructed on the principle of harmonized curves. This assumes that the height growth on a poor site increases in a fixed ratio in relation to a good site. This, however, is often not the case. As a matter of fact, the converse is more common that such a fixed ratio does not exist rather than that it does exist. Several cases have been found abroad (*13*) where the poorer sites currently

grow faster at middle age than the best site at the same age. The converse has also been reported (*11*). Such situations are fairly common and can easily be explained. Many otherwise fertile sites exhibit poor water drainage at rather short distance from the surface. Trees on such sites may grow fast during youth until the root systems are limited by poor aeration (*16*). The growth will therefore slow down appreciably. On the other hand, the roots of trees on porous sands will, in youth, have difficult access to moisture and nutrients. Early growth will therefore be only poor. Opportunity for expansion of the root system on such soils is, however, far greater than on poorly drained soils. As the root system expands and more soil moisture becomes available growth may pick up and even currently exceed that on the soils which show a higher early site index.

A dramatic example illustrating such a situation can be taken from Pack Forest in New York. In 1935 a mixture of white pine and European larch were planted on a glacial outwash plain, the soil being a deep coarse sand. The pine developed fairly normally for a site of such low fertility. The larch hardly grew at all. For a number of years it seemed quite obvious that the site was unsuitable for European larch and many of them died. About 7 or 8 years after planting some of the remaining larches began recovering and soon thereafter starting growing at a phenomenal rate. While the annual height growth of the larches immediately before recovery was 2 to 3 inches it soon changed into 2 to 3 feet. Today there are still some larches that have not recovered while those that did recover early are five to ten feet higher than the white pine.

Examination of deep soil pits revealed that the recovered larches had extended their tap roots downward into the substratum, a native characteristic of larch, to at least 11 feet where they could reach finer soil layers which probably provide lateral transport of water and nutrients from a fertile slope located about 400 feet away. On the other hand almost all the pine roots were concentrated within the solum. Only rarely were pine roots found below 3 feet.

This is perhaps an extreme case. But it illustrates what often takes place to a less dramatic degree in many stands. And it emphasizes that the current actual site index is far more realistic and in most cases of more practical value than the orthodox total potential site index.

Open Land

Site evaluation of open areas available for reforestation is an important problem. The primary forestry problem on these areas is to find species most suitable for such conditions that will develop into healthy stands of high production and which will improve or at least maintain the site quality.

To draw conclusions from observations of existing forests on what appear to be similar sites can be helpful but will in many cases not give a complete answer. The removal of the forest will, in itself, change soil, climatic, and biotic factors greatly. In addition, the soil may be further changed by cultural influences such as agricultural use, fire, and grazing.

Following such land use it is generally necessary to use less requiring species than those found in the original forest.

The use of the best possible provenance is of paramount importance. More mistakes on this point have probably been made in reforestation than in any other respect. It is a sad fact that in the majority of cases necessary information as to origin of the stock used for reforestation is incomplete. And even when the origin is known, very little effort is made to select seed from a climate closely similar to that of the planting site in question.

Knowledge of provenance and also of native site requirement for species to be used for reforestation is of great importance particularly in the Northeast since exotic species are used here to a far greater extent than in any other region of the country.

Summary

In summation of the principles guiding our concept of site evaluation it may be stated that:

Site is a *complex* composed of *many factors* influencing the development of a forest. A forester must be aware of all the *effective factors* that contribute to this development. It is especially important that he sifts out the most important factors that on a particular site dominate growth, health, or form of the vegetation. In practical application, indexes of these factors can give valuable information as to growth potential, and indicate the average site conditions over extensive areas. It is doubtful, however, that any of the methods discussed can be generally applied with successful results without special consideration for the objectives of management and local forest and site conditions.

Site is not static; it is dynamic. Frequently site factors can be influenced through silviculture. Site varies from period to period, from year to year, and man influences site greatly. True there are basic climatic and edaphic factors over which man has little influence, but through cutting, slash disposal, control of fire, grazing, and other activities, man has great influence upon the productive capacity of a given site.

Since the days of the alchemists, we have searched for the philosophers stone. We hope to find the one index that will give us the whole answer to all our worries.

A forester finds himself in a similar position as a physician does when he is to make a diagnosis of the factors that influence the biology of the human body. He bases his diagnosis on a number of observations and actual tests. Like the forester's, many diagnostic techniques of the physician are indirect indexes of the function of the body. Pulse, temperature, blood pressure and, not least, general appearance and complaints of the patient are all indexes, not directly acting factors.

A forester cannot always secure

as detailed information of his site as the physician can afford and perhaps fortunately trees can't complain. But his approach must be similar. Under the varied forest, soils, and site conditions we find in the Northeast an index of one fraction of the site complex is not enough. We must understand as fully as possible the requirement of the species we deal with and what each particular site has to offer. The one best measurement that we have of site quality is the vegetation itself.

Site is not one factor and site is not all factors. Site is the sum of all the *effective* factors among which usually one or more are dominant.

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P. T. COOLIDGE of Bangor, Maine, with W. F. McCulloch, chairman of the Program Committee for the meeting.

Boron Level and Boron Toxicity in Red and White Pine

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THE FOLIAR contents of boron characterizing the deficient, normal and toxic ranges are known for many horticultural plants but there are few such data for conifers.

Pinus resinosa Ait., red pine, and *P. strobus* L., white pine, in forest plantations on the glacial outwash surrounding the Adirondack area of New York are frequently stunted, with discolored foliage and various malformations. This syndrome has been resolved in part into acute deficiencies of potassium and magnesium, frost injury, and insect damage. There remain additional symptoms among which are those described by H. H. York and E. W. Littlefield in a little known report (*1*). Some symptoms, e.g., swelling, darkening and cracking of the pith, and abnormal needle numbers, suggested boron deficiency found in other plants. Borax applications, however, have had no beneficial effects, although symptoms in both check and treated trees diminished greatly during the favorable spring growing seasons of 1950-52; rather, symptoms of boron toxicity resulted from all but the lowest rates of application. The boron contents characterizing both the original malady and boron toxicity are the basis of the present note.

Experimental

The two soils studied are well drained with loamy sand surfaces overlying stratified coarse sand. The plow layers of both commonly contain from 4.5 to 5.5 percent organic matter. Reaction of the Colton soil (formerly mapped as Merrimac) is below pH 5.0 in the surface layer and becomes approximately 5.5 in the C horizon. With Morgan's extractant, readily soluble potassium is minimal, less than 5 ppm. The other soil, a variant of Hinckley, has a reaction of about pH 5.6 in the surface, and from 6.0 to 7.0 at a depth of 30 inches. The content of readily soluble potassium in the plow layer varies from 10 to 40 ppm. and that of water soluble boron (*2*) is 0.18 ppm.

In 1951 the plantations on the Hinckley variant and the Colton soil were 5 and 10 years old, respectively. The trees were stunted and of variable height: 3 to 8 feet for *P. strobus*, and 4 to 9 feet for *P. resinosa*. As part of a more comprehensive study, borax was applied on June 1 and 11, 1951 to 1/80 or 1/40 acre plots at the two areas at rates of 10 to 50 lbs. per acre, as indicated by Table 1. Samples of the 1951 foliage were collected at the two areas on May 2, and June 19, 1952, respectively. Needles were taken at mid-node on the terminals and upper laterals from 5 to 10 trees on each plot, dried at 70° C and ground. Boron was determined on duplicate samples using Dawson's[2] modification of the Naftel procedure (*6*). Calcium and potassium in the ashed samples were determined with a Beckman spectrophotometer.

Observations

The boron content of the foliage was highly related to the amount of borax applied to the soil (Fig. 1). The boron content of *P. strobus* was consistently higher than that of *P. resinosa*. The differences in soil and sampling date appeared to have no effect on the boron content of the tissue.

The potassium and calcium levels in the foliage were not affected by the boron content of the foliage (Table 1). Apparently the level of boron in the soil was not an important variable in potassium or calcium uptake. The decreasing ratio of calcium to boron with higher level of applied boron is a reflection of the increased boron uptake.

The only gross symptom of boron toxicity was browning and drying of the tips of the current needles. This was plainly visible in spite of a slight general discoloration attributed to potassium deficiency. The necrosis tended to be more pronounced on needles near the ends of the shoots and, in *P. resinosa*, in the upper half of the tree. With *P. strobus* receiving the 10 lbs./acre application of borax the apical necrosis extended about 1 cm. with a very abrupt demarkation from apparently normal tissue. At the 50 lb. rate the foliage was similarly necrotic for 1 to 2 cm. with the transition either abrupt or through a narrow zone of yellow green. *Pinus resinosa* was slightly less affected, possibly because of its greater foliage mass; at the 50 lb. application the bright brown necrosis extended .5 to 1.5 cm., with an abrupt termination. The necrotic zone in both species was irregularly banded with darker brown, suggesting a stepwise rather than continuous extension of the necrosis.

Trees in the plots receiving the

TABLE 1.—POTASSIUM AND CALCIUM CONTENT OF OVEN-DRY FIRST YEAR FOLIAGE AS RELATED TO BORON TREATMENT AND UPTAKE.

Soil and borax application	*P. resinosa*			*P. strobus*		
	K	Ca	Ca/B	K	Ca	Ca/B
	Percent		*Wt. ratio*	*Percent*		*Wt. ratio*
Hinckley, check	.34	.12	55	.29	.32	107
Colton, check	.25	.17	59	.31	.22	76
Colton, check	.22	.17	50	.27	.17	57
Colton, 10 lbs./A	.22	.15	42	.39	.12	18
Colton, 20 lbs./A	.25	.22	30	.34	.15	18
Hinckley, 40 lbs./A	.34	.15	17	.34	.32	21
Colton, 50 lbs./A	.25	.17	16	.31	.15	11

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[2]Dawson, J. E. Boron as a factor in the production of alfalfa in New York State. Ph.D. Thesis, Cornell University, Ithaca, N. Y., 1945.

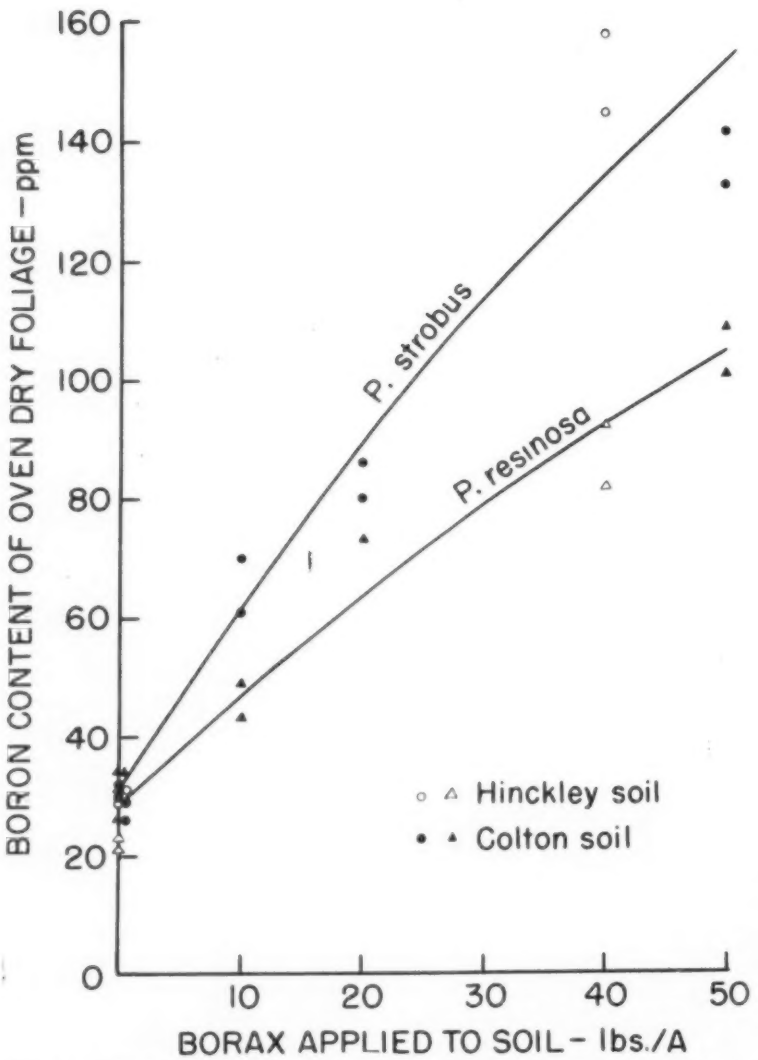

FIG. 1.—Effect of borax applications on boron content of mature first year foliage.

10 to 20 lb. applications showed substantially no symptoms in the foliage of subsequent years. With the 40 lb. application, however, symptoms have continued to appear with diminishing intensity for three years. At the close of the 1953 growing season the current needles of *P. strobus* were marked by approximately 1 cm. yellow-green to greenish yellow discoloration with a 1 mm. dark brown necrotic tip. In *P. resinosa* the yellowish discoloration affected only the apical 1 to 3 mm. of the 1953 foliage; there appeared to have been no further extension of the necrotic zone in the 1951 needles and the 1952 needles were intermediate in the nature of the injury.

Occasional trees of *P. sylvestris* and *P. ponderosa* occurred on the treated plots. Symptoms on these were similar to the above but generally milder.

More drastic but essentially similar symptoms were noted also in *P. taeda* in southern Arkansas where a proprietory product consisting largely of borax had been used as a soil sterilizant in an experimental firebreak. The rate of application to the sandy loam soil was heavy and the symptoms correspondingly severe. On the new foliage a bright brown necrotic zone extended 1 to 4 cm., with darker banding and usually an abrupt terminus. Paling and yellowing of much of the remainder of the needle also characterized the most strongly affected trees.

Discussion

Boron toxicity in the pines studied is readily identifiable by characteristic symptoms and the high foliar content of the element. On the acid sandy soils, symptoms were induced by borax application as low as 10 lbs/acre. At the 50 lb. rate, symptoms were conspicuous but the percentage of total foliage area affected was still relatively small. The symptoms agree rather well with those described by Ludbrook (*3*, *4*) and Mervius (*5*) for seedlings of other pine species.

Lack of growth response, coupled with the increased boron content and necrosis of the needles, obviously suggest a cause other than boron deficiency for the "gouting" malady reported by York and Littlefield (*1*). Further, the boron level of the untreated trees, 21 to 34 ppm, is thus presumably within a range adequate for the species.

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Regeneration of Aspen Cutover Areas in Northern Wisconsin

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A FEW YEARS AGO aspen (*Populus tremuloides* Michx. and *P. grandidentata* Michx.) was a tree of relatively minor economic value. As demands for raw material increased, however, while local supplies of other more desirable species decreased, wood-using industries have been turning more and more to aspen. About 117 million cubic feet of Lake States aspen were used by industry in 1950 (*1*). Pulpwood made up about two-thirds of this volume, and most of the rest was sawed into lumber.

As the demand for aspen has risen, its value has also increased. In 1945 the average appraised value of good aspen stumpage in northern Wisconsin was about $1.20 per cord. In 1953 the same quality of stumpage was bringing $2.50 or more per cord. During the same period the value of a cord of peeled aspen pulpwood, loaded on cars, had risen from $12.50 to $19.00.

The realization by industry of the desirable properties of the wood and the increase in value of aspen have caused a change in attitude toward the species. On good aspen sites it is no longer a weed tree but is a desirable component of the Lake States forests. Once a species to be eliminated or merely tolerated, it has now attained a stature warranting some degree of management on the better sites. Its value is perhaps still not great enough to justify intensive management except on the very best sites. The securing of adequate reproduction, however, is not only practical but almost obligatory, since in many stands the forest owner must choose between another crop of aspen or a crop of brush.

It has long been recognized that, following logging, aspen reproduces readily by means of root suckers (*6*), but whether suckers are as desirable growing stock as aspen seedlings has been the subject of some argument. Studies in Minnesota (*3*, *8*) indicate that, although many of the suckers may be weak and spindly, there are usually more than enough vigorous ones to produce a full stand per acre.

Aspen regeneration is fairly easy to obtain, but a full stand of root suckers (often called sprouts) does not automatically follow logging. Certain conditions must be met to insure reasonably complete stocking. As early as 1911 it was recognized that winter-cut stands produced more numerous and more vigorous suckers than did stands cut in the summer (*6*). More recent studies (*4*, *8*) have added to our knowledge of this seasonal element. The shading effect of residual trees has prompted some investigators (*8*, *9*) to advise clear cutting in the literal sense, rather than so-called "commercial" clear-cutting which may leave many marginal and submarginal trees per acre. Similarly, competition with established brush or reproduction of other species is reported as causing failure of sucker stands (*8*). Other factors which appear to affect the number and condition of suckers are: Age of the parent trees, with older trees presumably producing the more desirable stands (*2*); wildlife activity (*7*); dieback from disease and insects; and site quality and soil moisture. The effects of these factors have not yet been fully explored.

While much investigative work has been done on the individual factors affecting aspen reproduction, little effort has been made to correlate them. The following report is the result of a reconnaissance survey made over a wide area in an attempt to determine for each factor its apparent measure of responsibility for the success or failure of aspen root suckering following logging. The tracts were all logged in the period 1942-47 when the demand for wood was accelerated by war and immediate postwar needs.

A second aspect of the survey was to provide observations on natural conversion trends, ages at which the aspen stands on the various sites were being cut, and possibilities of better utilization. Finally, it was believed that such a survey would also furnish useful leads on what research projects in aspen silviculture might be worthy of subsequent study under controlled conditions.

Survey Procedure

In the period 1947-50, 46 aspen cutover areas were sampled in northern Wisconsin. Reproduction was measured and tallied on from 100 to 200 milacre plots on each area, and a tally of the residual overstory was made on all 1/20-acre plots centering on the reproduction quadrats. Plots were taken at fixed intervals—usually 66 feet—on paced compass lines laid out to obtain a representative sample of each area. The degree of shade cast by the residual overstory and by any dense tall brush was estimated.

On each study area as a whole, a record was made of age of the stand when cut, age of present aspen sprouts, and site index of original aspen stand as judged from occasional survivors of the cutting. Notes also were made on soil texture and moisture relations. The sale record gave the volume cut and season of logging.

Results of the Survey

Effect of light intensity.—One of the chief points of interest was the relation of stocking of aspen suckers to estimated light intensity and basal area of residual stand.

Sprouting was much better where the tracts had been cut fairly clean, leaving around 16.5 square feet or less of basal area per acre. Areas

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[2]Research forester, Timberlands Division, Consolidated Water Power and Paper Company, Rhinelander, Wisconsin.

TABLE 1.—OVERALL RESULTS OF THE REGENERATION SURVEY OF ASPEN CUTOVER AREAS

Density of shade[1]	Areas	Basal area of residual trees[2]	Average age of cutting	Reproduction per acre			Average annual height growth of aspen sprouts	Milacres stocked with 1 or more trees	
				Aspen sprouts	Other species	Total		Aspen	Non-aspen species
	Number	*Square feet*	*Years*	*Number*			*Feet*	*Percent*	
Open	3	6.4	5.7	2,827	1,067	3,894	1.37	69	29
Light	24	16.5	5.3	2,649	1,053	3,702	1.10	61	33
Medium	11	25.4	4.6	1,424	2,287	3,711	1.00	42	58
Heavy	8	47.6	4.2	377	6,565	6,942	.40	15	88

[1]Based on estimated amount of light reaching the zone between 3 and 6 feet above the ground. Heavy, tall brush was taken into consideration in making this rating. For open areas, light was estimated at 91 to 100 percent of full sunlight; light shade was estimated at 76 to 90 percent; medium shade at 51 to 75 percent; heavy shade was estimated at less than 50 percent of full sunlight, often averaging as low as 10 or 20 percent.

[2]Includes all aspen over 2.5 inches d.b.h. and all other species over 1.5 inches d.b.h. at time of examination.

classified as open or lightly shaded averaged 2,827 and 2,649 aspen sprouts per acre respectively, compared to only 377 per acre for the heavily shaded areas (Table 1). Dense brush, especially of hazel, had a sharply depressing effect on number of aspen sprouts, reducing their numbers by about 75 percent compared with brush-free areas.

Areas with heavy shade often had present a substantial basal area of maple, balsam, aspen, or other trees in the 2- to 5-inch diameter classes. Reproduction of non-aspen species was more abundant on areas with considerable residual overstory, probably because more seed trees were available; also, the partial overstory of aspen and other tree species may have had a protective effect on survival of the small northern hardwood and balsam fir reproduction. Then too, a considerable amount of established reproduction of species other than aspen was probably present on some of the better sites at time of logging. Northern hardwoods comprised about three-fourths of the non-aspen reproduction, with red maple predominant. Balsam fir accounted for most of the remainder.

Average annual height growth of the aspen sprouts was very sharply retarded by a fairly heavy residual overstory; height growth in the open averaged 3.4 times as fast as that in heavily shaded areas.

Effect of residual basal area.—A curve relating the data for number of aspen sprouts per acre to basal area of residual overstory on cutovers 5 or more years of age shows the following results:

Basal area of residual stand in square feet	Number of aspen sprouts
0	2,720
10	1,480
20	1,000
30	740
40	580
50	470
60	380
70	310
80	250
90	190
100	140

Effect of volume of aspen cut per acre.—The number of aspen sprouts was directly related to the amount of aspen cut from the various areas. Based on curved averages from 33 individual cuttings 3 years of age or older, when the record of the scale of cut products was accurate, the results per acre were as follows:

Number of cords removed	Number of aspen sprouts
2	1,420
3	1,655
4	1,785
5	1,860
9	1,970

In brief, it can be said that aspen has a tremendous sprouting potential, capable of producing good stands of regeneration when as little as 3 cords of merchantable material are cut per acre.

Light conditions after logging apparently affect establishment of sprouts more than the amount cut, since the ratio in stocking in areas of good versus poor light was 7.5 to 1 (Table 1), whereas the ratio in stocking where 9 cords were cut per acre versus a 3-cord cut was only 1.2 to 1. Normally, a cut of at least 3 cords must be available before a stand is considered commercially operable in northern Wisconsin. Some of the areas involved in this study had scattered merchantable balsam fir and paper birch or other species which helped to bring the average cut to 3 cords or more per acre.

Effect of years since logging.—As the age of the aspen sprouts increased, the number decreased markedly due to mortality from shade, root competition, frost, mammal damage, disease, and insects. The average number of aspen sprouts per acre ranged from 6,825 on 2-year-old cuttings to 890 on those 9 years old (Table 2). Obviously, in sizing up adequacy of regeneration on aspen cutover tracts, the age of the reproduction must be considered.

Effect of stand age before cutting.—An analysis of data from 24 selected aspen cutover areas indicated that sprouting abundance held up well in all cases where the stand age before cutting was between 26 and 55 years old. By such age-group classes the average sprout stand per acre was as follows: 30-year, 1,852; 40-year, 2,011; and 50-year, 2,807. These data were from tracts clearcut 3 or more years previously in such a manner that overhead shade was not a limiting factor.

Effect of site index of original stand.—The better sites were more fully stocked with aspen sprouts than the poorer ones. On areas where the site index class of the original stand was 70, 60, and 50

(at age 50), the average stand of aspen sprouts was 3,885, 1,540, and 1,282 per acre respectively. The nine tracts where these results were obtained were quite comparable as to age class (4 years or older), and had sustained relatively little damage by deer or rabbits. Average height growth per annum on the three site groups was 1.8, 1.0, and 1.0 feet respectively, indicating a considerable advantage on good sites.

Effect of season of cutting.—At the outset it was believed that season of cutting might be a major factor in abundance or vigor of sprouting of aspen. The survey data indicated that the number of sprouts in late-summer cuttings was only about 74 to 78 percent of that in the dormant-season or spring (peeling-season) cuttings. Average height growth also was superior in dormant-season cutting compared with peeling-season or late-summer cutting. The contrast, however, was not great enough to suggest that stocking in midsummer or late-summer cuttings was seriously low.

Conversion to other species.—A rather high percent of the acreage in the 46 aspen areas was converting to other species, notably shade-tolerant northern hardwoods and balsam fir. Fourteen areas on good soils (average site index 69 at age 50) had an average of 4,878 non-aspen tree seedlings and sprouts per acre. On fair to poor sites, the amount of non-aspen reproduction was only about one-fourth that on good sites. About three-fourths of the non-aspen reproduction is northern hardwoods, and almost one-fourth is balsam fir with an occasional spruce.

Adequacy of regeneration on the cutover areas.—The relation of percent of milacres stocked with one or more sprouts to number of aspen sprouts on the same milacres is given in Figure 1 on a per-acre basis. A 40-percent stocking was found equivalent to about 850 trees per acre, 60-percent to about 1,450, and 80-percent to about 3,450 trees per acre.

Table 3 shows criteria for good stocking related to age of aspen cutover areas, developed from observations made during the survey and supplemented with other information available.

TABLE 2.—NUMBER OF ASPEN SPROUTS AS RELATED TO YEARS SINCE CUTTING OF ORIGINAL STAND OF ASPEN

Period since cutting	Tracts	Aspen sprouts per acre
Years	*Number*	*Number*
2	3	6,825
3	9	3,150
4	9	1,650
5	9	1,250
6	4	1,125
7	7	1,040
8	2	960
9	3	890

TABLE 3.—CRITERIA FOR GOOD STOCKING RELATED TO AGE OF ASPEN CUTOVER AREAS

Number of years since cutting	Minimum percent of milacres stocked[1]
2	85
3	75
4	60
5	55
6	50
7	48
8	45
9	43

[1]Equivalent numbers of stems per acre are given in Figure 1.

Only 22 of the 46 aspen tracts examined in this survey were satisfactorily stocked, if stocking criteria listed in Table 3 are applied to aspen reproduction only. However, if all reproduction of species rated commercially equal to aspen is included, then fully 95 percent of all areas examined were satisfactorily stocked. By the latter criteria of counting all reproduction, 8 percent of the areas that had heavy deer or rabbit damage had unsatisfactory stocking versus only 3 percent of the undamaged ones (at time of examination).

Time of harvesting of aspen in relation to recommended rotation age.—Previous studies of site and yield in Minnesota aspen *(5, 8)* indicate that the most productive rotation ages for the type are about 55, 50, 45, and 40 years for site index classes 80, 70, 60, and 50 (at age 50) respectively. These rotation ages should each be reduced 5 years to make them apply to the northern Wisconsin area surveyed. The resulting criteria show that 22 percent of the 46 cutover tracts in the present study were harvested 10 or more years before the specified age and 15 percent were harvested 10 or more years after it. The general tendency was to harvest early on good sites and late on poor sites. The loss of growth on good sites for the 10- to 15-year period before maturity is serious because well stocked stands are making excellent growth both in quantity and quality at that time.

Utilization on the aspen cutover areas.—Waste of wood on the 46

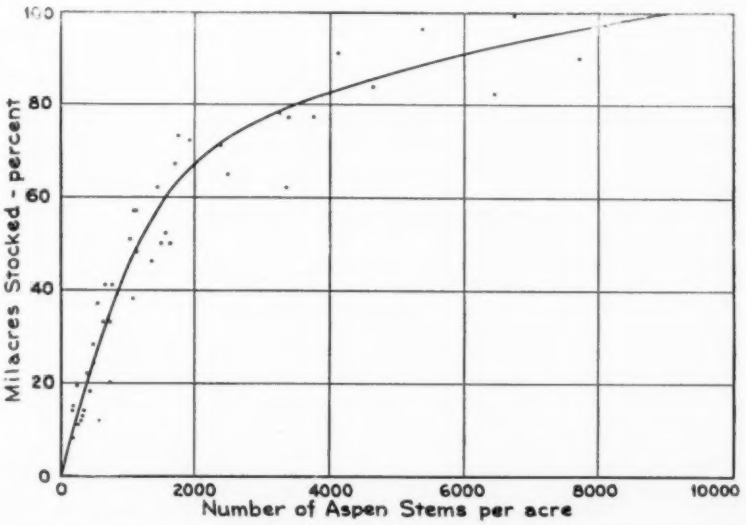

FIG. 1.—Relation of percent of milacres stocked to number of aspen sprouts per acre.

aspen cutovers in the form of standing merchantable trees which would die before the next logging operation in the area averaged only 0.85 cords per acre for trees 6 inches d.b.h. or larger. Only 10 percent of the cutover tracts had 2 or more cords left per acre, 11 percent had between 1 and 2 cords per acre, and 79 percent had less than 1 cord per acre. Mortality which had occurred after logging was excluded because of the difficulty of determining time of death.

Utilization could have been improved on at least 21 percent of the areas by cutting all trees which would make one or more 100-inch-long pulpwood bolts to a 4-inch top inside bark. Until recently, the utilization standard has been to cut only trees making two or more such bolts. Closer utilization in the future will produce not only a somewhat greater yield but also (and important) more optimum conditions for full stocking of the resulting regeneration.

Summary

1. A survey of 46 cutover aspen stands was made in northern Wisconsin in the period 1947-50 to determine their adequacy of stocking with aspen and other species at 2 to 9 years after logging, and to correlate the amount and growth of reproduction with the residual stand.

2. Complete clearcutting of aspen produced the most abundant sprout regeneration and resulted in the best height growth. Aspen reproduction per acre ranged from 2,827 sprouts on rather open sites with good sunlight conditions resulting from heavy cutting to as little as 377 on sites with heavy residual cover. Annual height growth of aspen sprouts ranged from 1.37 feet in the open to 0.40 feet in heavy shade.

3. Sprouting of aspen was quite abundant in any areas where the volume of harvested aspen was 3 or more cords per acre and moderately abundant where only 2 cords were cut per acre.

4. Abundance of aspen sprouting is related to the basal area of the residual stand. The number of sprouts per acre ranged from 2,720 on clearcut areas and 1,000 sprouts at 20 square feet of basal area to as low as 580 sprouts at 40 square feet of basal area.

5. The number of aspen sprouts per acre decreased rapidly between the second and ninth years after logging.

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Coming Events

S.P.C.A. Annual Meet

The annual meeting of the Southern Pulpwood Conservation Association will be held January 17-18 at the Atlanta Biltmore Hotel, Atlanta, Ga.

Southeastern Section Annual Meeting

The annual meeting of the Southeastern Section will be held January 20 and 21 in Montgomery, Ala. at the Whitley Hotel.

Appalachian Section Meeting

The annual winter meeting of the Appalachian Section will be held January 27 and 28 at the Washington Duke Hotel, Durham, N. C.

Allegheny Section Meeting

The annual meeting of the Allegheny Section will be held at the Bellevue-Stratford Hotel, Philadelphia, February 10 and 11.

21st North American Wildlife Conference

The 21st North American Wildlife Conference will be held in New Orleans, La., March 5-7. Headquarters: Jung Hotel.

Forest Service Policies as They Affect the Lumber Industry: A Case Study of the Black Hills

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GOVERNMENT OWNERSHIP and management of timber lands by the U. S. Forest Service has been soundly based upon the objectives of maintaining forests, furnishing a continuous supply of timber, and creating favorable conditions of waterflow, as stated in the Act of June 4, 1897. In the attainment of these objectives the Forest Service finds itself involved in functions which directly affect the normal operation of free private enterprise in the industries which are dependent upon timber as a raw material. One particular function which has had very important economic effects upon private industry is the sale and disposal of national forest stumpage. In a good many sections of the West, national forest timber has become increasingly important as a raw material to the wood-using industries. This has been true for two reasons. First, the privately owned mature timber has been practically depleted. Second, the continuing need for raw material in timber has forced industries to harvest more inaccessible and less desirable locations. These include a large portion of the national forests. As private industry becomes more dependent upon public timber it becomes more and more influenced by, and concerned with, the public policies for timber disposal. Evidence of this growing concern is found in the recent hearings in Congress regarding Forest Service timber sales,[2] in the late changes in timber sale contract forms,[3] and in a recently conducted study of timber sale administration.[4]

Certain characteristics of the wood-using industries tend to be directly or indirectly affected by timber sale policies and practices. Important among these are the integration of manufacturing firms and processes, the stability of individual enterprises, and the markets which are served. The particular timber sale policies which have influenced these characteristics are those concerned with the allowable size of timber sales, the number of permissable timber sales, methods of appraising and selling stumpage, special requirements placed on stumpage buyers, and the estimated allowable cut.

Tracing the relative importance of these factors in Forest Service policy and their effect on the wood-using industries is made difficult by the presence of various external influences, such as large timber holdings other than those of the Forest Service. This report is based upon a case study of the Black Hills region of South Dakota. It is believed that the findings are illustrative of and applicable to similar problems of the U. S. Forest Service in the administration of its lands in other parts of the federal domain. Four characteristics of the Black Hills area give it advantages over other forest areas for this type of study. These are its isolated location, the length of time under management, the preponderance of national forest land ownership, and the presence of only one important commercial species.

Method of Study

The history of the development of the forest industries in the Black Hills, paralleled by the history of the forest policy and administration, sheds important light upon certain relationships which may be of relatively recent occurrence and of significance today. An historical inquiry was carried out by dividing the period since the setting aside of the national forest land in the Black Hills into several shorter periods roughly corresponding to general fluctuations in the national economy. This was to serve the purpose of subordinating these fluctuations as factors in determining the condition of the lumber industry at any given time. The information used was obtained from four principal sources: federal government records, a survey of the lumber industry, current newspaper records, and personal interviews with the timber land administrators and with the lumbermen.

The General Land Office Administration

From the time that the Black Hills became a part of the unappropriated government land in 1877 until most of the area was set aside in the forest reserve, the General Land Office of the Department of the Interior loosely administered it without any special organization. During this time legal cutting took place under the Free Timber Act of 1878, the Permit Act of 1891, and the Right of Way Act of 1875. Timber sales were not permitted and, consequently, any cutting done outside of that done under these acts, was unlawful. These acts were designed to provide the free timber that was needed in the settlement and development of the frontier area. Mining and railroad construction were the principal early uses of the timber. Utilization in the woods and in the sawmills was generally very poor due to the limited demand, the apparent abundance of timber, and the lack of any effective federal administrative organization. Sawmill operations were developed to fill the needs of the miners, railroaders, and settlers under little or no influence from the General Land Office.

The establishment of the Black Hills Forest Reserve in 1897 was followed by the development of an

[1]Based on a thesis of the same title submitted to the faculty of State University of New York College of Forestry in partial fulfillment of the requirement for the Ph.D. degree.

[2]Hearing before the Subcommittee on Public Lands of the Committee on Interior and Insular Affairs, House of Representatives. Marking and pricing of timber in national forests. 1954.

[3]In Forestry News of JOURNAL OF FORESTRY. May, 1955, pp. 394, 396.

[4]This was the "Evaluation of Forest Service Timber Sales Activities" made in 1955 by McKinsey and Company, Washington, D. C.

...nization in the General Land ...fice for its administration. Timber sales were authorized in limited amounts for local use but the procedures for obtaining them were time consuming and discouraging. Broad cutting requirements were specified in these sale agreements, but their enforcement was lax. Mining and railroad construction continued to offer the principal markets. The small sawmill operators found it very difficult to adhere to the rules for obtaining and cutting the timber and many of them were temporarily shut down as a result. The Homestake Mining Company led the way for the lumber industry by purchasing timber and meeting the necessary regulations. Utilization in the woods during this period improved slightly while the utilization in the mills continued at about the same generally low level. The principal accomplishment of the administration of the General Land Office was the impression upon the timber users that they would have to comply with the federal requirements for securing timber if they were to continue to operate.

The Forest Service Administration

In 1905 the Black Hills Forest Reserve was placed under the administration of the Forest Service, a bureau of the Department of Agriculture. From that time until about 1930 this administration placed special emphasis on the two principal objectives; (1) of supplying local needs to the fullest extent, and, (2) of placing the forest in good growing condition. Sale procedures were streamlined and the cutting requirements were adjusted to fit the needs of the timber users as well as those of the adopted silvicultural system. The local demand for timber from mining and railroad activity declined somewhat toward the end of this period. The removal of the local state embargo on out-of-state exportation of lumber stimulated the shipment of a larger portion to the general market outside of the Black Hills. The most notable development in this period was the establishment of a large and complete mill operation at Rapid City, South Dakota for the production of lumber for the general market. The demand of this operation and also that of the Homestake operation for large self-contained bodies of timber in single blocks was generally met by the Forest Service during this period. Both of these operations were located in areas where there was little demand for federal timber from the numerous small operators. The practice of making large sales for the large operation at Rapid City was regarded as more or less of temporary character since the forest could not continually provide such a large cut on a sustained yield basis.

This period was also characterized by low and stable stumpage prices, by sales of a size that suited the needs of the different types of operators, and by the lack of competition for the federal timber.

Timber sale policies and conditions in the lumber industry underwent considerable change in the period from 1930 to 1946. Immediately following the depression, community and industry stability became primary objectives of the Forest Service. Certain steps were taken to assist the operators through the depression years. In spite of these, however, the industry suffered a considerable degree of regression and set-back in strength, particularly among the small operators.

During World War II the principal objective was maximum production to meet war demands within the allowable limitations and with the available production facilities. In certain areas strong competition for the federal timber began to develop, but the Forest Service exercised special war-time powers in order to cope with such situations. These were powers granted to the War Production Board on behalf of whom the Forest Service acted.

Most of the operators gained new financial and industrial strength during the war period. However, there were but few improvements made in utilization practices in the small mills. In fact, their utilization standards tended to drop due to the shortage of new or replacement equipment and the favorable price relationship of rough over finished lumber products.

Although the principal market demand had changed from that for mine materials and railroad construction to lumber for the general domestic market, the utilization procedures had undergone little change. The Homestake Mining Company established a large mill at Spearfish in 1940 and the complete up-to-date processing in this plant made it possible to produce finished lumber for the general market as well as the mine materials needed. However, the small sawmill operations in the Black Hills remained essentially the same.

Following World War II the Forest Service administration concentrated upon community stability and improved utilization as major objectives. The sale procedures were resumed in essentially the same manner as they had been prior to the period of the war. The increase in competition in the southern hills became the most important problem of the administration. In this area the individual sale size had been kept at about that volume needed for one year's operation of one small sawmill and it had been hoped that this would make it possible for all of the established mills to remain in operation.

The general lumber market became of first importance and, consequently, an increasing proportion of the lumber was being surfaced, graded, and processed into products which would meet this demand. The concentration yard type of operation was responsible for the bulk of this increased utilization while the typical small sawmill operation tended to continue at about the same efficiency and utilization standards.

The Results of Federal Administration

Three broad objectives of the Forest Service have been attained in the Black Hills. The forest has been maintained intact and has, at the same time, provided a con-

tinuous supply of timber for the local industry and created favorable conditions of waterflow. It has been generally expected that these three things should be accomplished with a minimum of interference with the competitive free enterprise economy which this country has accepted as the most desirable system of attaining a high standard of living. This study was an investigation into the possible adverse effect of federal ownership and management of forest land on the functioning of such an economy in the lumber industry.

The historical analysis revealed that the timber sale policies of the Forest Service has continually been a factor in determining what is done by the lumber industry in the Black Hills. In the long run the Forest Service policy of cutting no more than could be grown has made it possible for the industry to become essentially a permanent one. It seems very likely, in view of experience in other parts of the nation, that such a permanence could not have been attained without some system of public ownership of the major portion of the forest land in this area. This permanency of the lumber industry must be listed as the first important result of the federal timber administration.

A second result has to do with the nature of the industry itself. Past experience in other areas of the United States seems to indicate that the assurance of a permanent supply of raw material for the industry is conducive toward improved utilization. However, a survey of the lumber operations in the Black Hills reveals the fact that this area has tended to lag both in efficiency and in standards of utilization, and has not developed beyond the average for lumber operations in other parts of the nation. This was found to be particularly true in the southern hills where competition has been exceedingly strong among the numerous small operators and where special endeavor had been made to assure permanence to the industry. In contrast to this, it was found in the northern hills that the major part of the timber from the federal lands was being efficiently utilized in the large permanent timber and lumber operations established there. The continued existence of these two situations has been made possible by the Forest Service policy of making large timber sales to the one large operating company in the northern area and of making numerous small sales to the many small operators in the southern area in order to give the established operators in each area the annual cutting volumes necessary for them to continue to operate at about their past levels. The result for the entire Black Hills region has been the continuation of an industry based principally on small sawmill units. Is this a good or bad result? As a measure of the extent of free enterprise in the industry it may be classed as good. However, the poor efficiency and low utilization standards in the small mills in contrast to those in the larger mills seems to indicate a condition that may not be so desirable.

There seems to be one other result of the development of the Forest Service practice of placing small sales volumes on the market for the competing small operators. Timber sales in the southern hills are now being made for about the volume needed by a small mill for one year. This study revealed that a feeling of uncertainty about the future has developed among the operators who must depend upon this year-to-year, "hand-to-mouth" existence. This, in turn, has created a tendency to avoid making plans or investments for the improvement of either efficiency or utilization.

Recognizing the lack of good utilization and the difficulty of administering the timber resource under the conditions existing in the southern hills, the Forest Service investigated the possibility of establishing a federal sustained yield unit there. Essentially, this would have made possible the selection of the responsible operators and the award of the timber sales to them without outside competition. Such a plan did not seem feasible, as already the capacity of the established mills was in excess of the available supply of timber and there seemed to be little chance of satisfactorily determining which mills would remain and which would not. Neither was it certain that the elimination of all outside competition would bring about the desired improvements. Furthermore, there has always been a general antipathy for government action which restricts free enterprise. This is revealed in the disapproval which has been voiced by several of the small operators in the northern hills with regard to the large sales being made to the Homestake Company.

Luther Gulick[5] has stated:

> . . . . there is even evidence that we suffer from too much, not too little, competition in most markets. In any case, it is important that our zeal for trust busting be not used to prevent the development of large integrated wood processing mills. The development of such mills is one of America's foremost needs in the wood utilization section of the economy.

The truth of this statement seems to be exemplified in the Black Hills lumber industry. In being realistic, however, it hardly seems reasonable that the Forest Service should sponsor a large monopolistic operation in the southern Black Hills, any more than they should attempt to distribute the volume now going to the Homestake Company into numerous small sales. What, then, should be the policy of the Forest Service in the Black Hills regarding the making of sales of different sizes and the fostering of different sizes of operations?

Planning for the Future

Positive action by the federal government in controlling private enterprise has always been vigorously opposed by private industry. This is especially true in prosperous times such as have recently existed. The findings of this study seem to indicate that the Forest Service should attempt to maintain a neutral position in any conflict which may arise between large interests and small interests in the Black Hills lumber industry. Maintaining such a position will undoubtedly be more difficult than

[5]Gulick, Luther H. American forest policy. Duell, Sloan, and Pearce, New York, p. 202. 1951.

some other alternative, such as the imposition of a federal sustained yield unit over all or part of the area. A neutral position such as has been suggested will require that the Forest Service become thoroughly familiar with the problems of the local lumber operators and be prepared to make any adjustments in policy which seems necessary to coincide with the local trends in the industry.

The problem of poor utilization in the many small sawmills is an important one which the Forest Service could attack and still remain neutral. Studies of the causes could be made on a local level by local forest officers. Recommendations to the operators, based on such studies, could be very helpful in promoting the needed improvement. This also could be an opportunity for the Forest Service to obtain greater benefits from the funds being spent in utilization research in the Forest Products Laboratory at Madison, Wisconsin.[6]

Although integration is frequently necessary in order to attain better utilization, it does not always require the existence of a large single firm. Vertical integration, in which more complete local processing and the manufacturing of by-products were undertaken, could arise from the coordination of many small firms.

The development of better and additional wood products through more intense utilization depends to a great extent upon the available markets for them. This problem of markets is another one with which the local forest administration should become more thoroughly familiar in order to assist the industry in improving its own conditions. Although the general lumber markets are primarily determined by the national level of economic activity, much can be done to strengthen the position of any local lumber industry in this general market. The Black Hills area is situated in the center of a vast treeless prairie area in which there exists a considerable market for lumber and wood products. Even now, as the forested area within the region itself becomes more heavily populated and industrialized, the local lumber does not supply as much of the local market as it is capable of doing. One reason, of course, has been the bad name which the local lumber seems to have acquired in the past as a result of its poor manufacturing and processing.

It is very difficult to say what an increased interest in and understanding of the utilization and marketing problems of the wood-using industry would mean in terms of timber sale policy. The strength that the industry could gain from the help of the Forest Service in these problems might make it possible for the small size sales to continue without affecting the industry. On the other hand, the Forest Service might discover that it should make somewhat larger volumes available at one time in order to give to these operators a sense of greater permanence and thus make it possible for them to process and market more efficiently.

The Forest Service has exercised its wide technical forestry knowledge and skill in attaining desirable forest conditions. This will undoubtedly continue to be done in keeping with the changing needs of the forest. In contrast to this, the Forest Service has not shown an equal appreciation of the economic and social problems of local lumber industries, especially in view of the public's concern for good utilization and stable local communities. Failure to recognize these problems and to seek their solution at the source can only mean that it may soon become necessary to make even greater departures from the free private enterprise system in order to attain the desired benefits of a stable local economy.

[6] Since the writing of this article the Forest Utilization Service of the Rocky Mountain Forest and Range Experiment Station has established the Rapid City Research Center in the Black Hills.

Some Effects of Depth of Planting upon Loblolly Pine in the North Carolina Piedmont[1]

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INSTRUCTIONS to tree planters axiomatically stress the need for setting seedlings uniformly at the depth at which they grew in the nursery. In practice, wide departures from this "ideal" frequently occur even when hand tools are used. In machine planting the deviations tend to be even greater. Because of soil disturbance and rapid forward motion of the machine, the planter can make only a crude guess as to where the groundline and root collar will be at the moment the planting slit closes in and robs him of further opportunity to adjust seedling depth.

Past investigations quite generally conclude that deviations from "proper depth" of setting are harmful. Wakeley (*7*) points out that "setting southern pine seedlings at the wrong depth probably reduces initial survival more often and more seriously than any and all other errors in planting technique combined." Minckler and Chapman (*3*) suggest that the surface around newly planted trees should form neither a mound nor a hole, particularly on bare, freshly burned, or easily eroded surfaces. Cummings (*1*) recommends setting seedlings one inch deeper than they grew in the nurseries in preference to shallow planting, in the event setting at the correct depth is not possible. Wide experience with many species, and rigorous experiments with longleaf and slash pine (*7*), as well as comparisons of hand-tool and machine-planted longleaf pine (*5*) indicate that shallow planting is harmful, but that deep planting may not materially affect initial survival. Some recognition has been given to the possibility of increasing or inducing disease hazards to the roots and root collar through over-deep setting (*2*).

The published records of past investigations deal almost exclusively with initial survival, without follow-up on the effect of planting depth on growth. The first observation that deep setting may actually stimulate height growth of seedlings appears to have been made by Slocum (*4*). In a small test in 1950, repeated in 1951, he observed that loblolly seedlings planted deep grew better than those planted correctly and without adversely affecting survival. Although these two exploratory trials had neglected to replicate treatments, the results were so striking, and so unexpected, that further intensive study seemed warranted. Accordingly, more critical experiments were installed in 1952 and in 1953. The purpose of these experiments was to determine whether varying depths of planting significantly affect the survival and growth of loblolly pine, and to determine whether deep planting has an adverse effect on the root system.

Experimental Procedure

Design and other details.—The design of the 1952 experiment was a randomized complete block arrangement, with 5 treatments within each of 6 blocks. The 5 treatments were: (1) correct depth, (2) ¼ of stem buried, (3) ½ of stem

FIG. 1.—Loblolly pine seedlings of the 1950 test in the middle of the fourth growing season. Row on right correctly planted; row on left planted with ½ of stem buried.

[1]Contribution from the Department of Research, North Carolina Agricultural Experiment Station, Raleigh. Published with the approval of the Director of Research as Paper No. 630 of the Journal Series.

TABLE 1.—AVERAGE SEEDLING SIZE AND PLANTING DEPTHS OF LOBLOLLY PINE SEEDLINGS IN THE 1952 TEST

Planting depth	Avg. fresh weight per seedling	Avg. stem length per seedling	Avg. stem length above ground after planting	Actual discrepancy[1] in depth
	Grams	*Inches*		
Correct	5.88	7.63	6.83	0.80 too deep
¼ of stem buried	5.99	7.86	5.72	0.17 too deep
½ of stem buried	5.71	8.00	4.32	0.32 too deep
¾ of stem buried	5.50	8.02	2.68	0.67 too deep
¼ of root length exposed	5.87	7.82	9.15	1.70 out
Mean of all depths	5.79	7.87		

[1]Represents deviation from intended depth of setting in relation to original stem length.

TABLE 2.—AVERAGE SEEDLING SIZE AND PLANTING DEPTHS OF LOBLOLLY PINE SEEDLINGS IN THE 1953 TEST

Planting depth	Large stock		Small stock	
	Avg. stem length above ground after planting	Avg. length of stem buried	Avg. stem length above ground after planting	Avg. length of stem buried
	Inches			
Correct	6.54	.59[1]	5.43	.00[1]
⅓ stem buried	4.47	2.18	3.67	1.76
⅔ stem buried	3.03	3.51	2.35	3.08
Buried to tip	1.40	5.14	1.13	4.30

[1]Estimated depth based on average measure of 100 seedlings in each size class.

TABLE 3.—FRESH WEIGHTS, DRY WEIGHTS, AND RATIOS OF A SAMPLE OF LOBLOLLY PINE SEEDLINGS USED IN THE 1952 AND 1953 DEPTH OF PLANTING TESTS (Basis: 200 '52 seedlings; 200 '53 seedlings)

Year and size	Fresh weight per seedling	Dry weight per seedling	Ratio Dry: Fresh
	Grams	*Grams*	
1952	5.78	2.40	0.42
1953—large	6.10	2.24	0.37
1953—small	2.96	1.08	0.37

TABLE 4.—PERCENT SURVIVAL OF LOBLOLLY PINE BY YEARS AND PLANTING DEPTHS.

Depth of planting	Year of planting					Weighted mean of all years
	1950[1]	1951[2]	1952[3]	1953[4] Large	1953[5] Small	
	Percent					
Correct	96.7	97.0	99.2	85.0	92.0	93.98
¼ stem buried	96.7	93.7	99.2	—	—	97.87
⅓ stem buried	—	—	—	98.0	88.0	93.00
½ stem buried	96.7	90.6	94.2	—	—	94.00
⅔ stem buried	—	—	—	95.0	94.0	94.50
¾ stem buried	—	93.7	95.8	—	—	95.38
Buried to terminal	—	—	—	90.0	96.0	93.00
¼ root length exposed	—	100.0	75.8	—	—	80.64
Mean of all depths	96.7	95.0	92.8	92.0	92.5	92.55

[1]100 seedlings.
[2]150 seedlings.
[3]600 seedlings.
[4]Large—400 seedlings.
[5]Small—400 seedlings.

TABLE 5.—CURRENT HEIGHT GROWTH OF LOBLOLLY PINE SEEDLINGS. 1952 TEST.

Season	Depth of planting					
	Correct	¼ stem buried	½ stem buried	¾ stem buried	¼ root exposed	All depths
	Inches					
1952	5.16	6.98	5.86	7.04	4.14	5.83
1953	12.16	14.37	12.78	14.25	11.16	12.95
Both seasons	17.32	21.35	18.64	21.29	15.30	18.78

Least significant difference (LSD) due to depth at 5% = 3.129; 2% = 3.792; 1% = 4.627.

buried, (4) ¾ of stem buried, and (5) ¼ of root system exposed.

The 1952 planting stock was 1-0 loblolly pine grown in the Forest School Nursery at Raleigh, N. C. The stock was lifted in January, graded to uniform size, assembled into bundles of 21 seedlings each, then carefully heeled-in, with bundles assigned at random to each of the 5 treatments. Only 20 seedlings were used in the field planting, the extra seedling being included as insurance against a low count. All 21 seedlings in each of 35 bundles were measured for stem length, each bundle weighed to determine green weight, and 5 bundles selected at random to determine the green weight-dry weight ratio.

The trees were planted at the Hill Demonstration Forest in Durham County, N. C., on February 21, 1952. The planting site was the same as used in the 1950 and 1951 tests. This site is a typical well-drained, slightly eroded, old field. The soil is Georgeville clay that supported a dense stand of broomsedge at the time of planting. Soils of this type are warm during the growing season. Exposure is due East with a slope of 8 percent. The well developed broom-sedge (*Andropogon* sp.) sod was not disturbed in the planting operation. The trees were planted with the Council bar, spacing the seedlings 2 feet apart in rows 3 feet apart. Six hundred trees were used in this field test.

As it was too time-consuming to measure and mark the planting depth or amount of root to be exposed on individual seedlings, the designated depth was estimated by eye. Small deviations were not considered as essential factors in this study. Immediately after planting, the trees were measured to the nearest one-tenth inch of height as a check against planting depth, and to the nearest one-half millimeter in diameter at ground level for diameter growth comparisons.

Current growth for the year was determined by the same method of measurement in late November 1952.

The design of the 1953 experiment was essentially the same as

in the 1952 test, but only four treatments were used as follows: (1) correct depth, (2) ⅓ of stem buried, (3) ⅔ of stem buried, and (4) all of shoot buried except the terminal bud and top round of secondary needles. With 2 size classes, 5 blocks, and 4 treatments, 800 seedlings were used in this field test. Source, grading, and handling of stock, location of planting site, and planting procedure and other details were the same as in the 1952 test. The trees were planted on March 3, 1953.

Seedling size and other characteristics.—Seedlings used in the 1952 study were quite uniform in size, with an average stem length of 7.87 inches and an average fresh weight of 5.79 grams per seedling (Table 1).

In the 1953 study, the large seedlings averaged slightly more than 1 inch longer in stem length than the small seedlings, but for both size classes the estimated point for depth of setting was in good concordance with the intended depth (Table 2).

The large seedlings were more than twice as heavy as the small seedlings, and, based on dry weight-fresh weight ratios, both size classes were more succulent than the seedlings used in the 1952 experiment (Table 3).

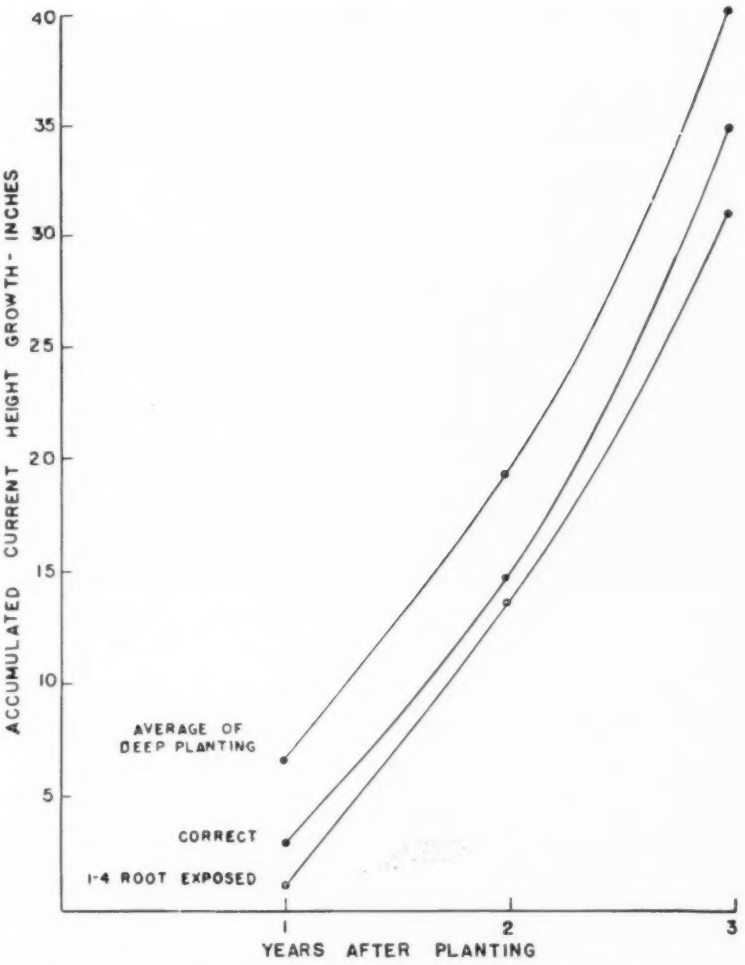

FIG. 2.—Accumulated current height growth in relation to years after planting for three planting depths, namely, correct, ¼-root exposed, and averages for all degrees of deep planting.

Results

Survival.—The survival of 1-0 loblolly pine was not significantly affected by any degree of stem burial in any of the tests. However, in the 1952 test seedlings with ¼ of the root length exposed did show a significant decrease in survival, with an absolute difference of nearly 20 percent between this treatment and the next poorest treatment (Table 4). This difference is significant at the 1 percent level.

Growth.—In the 1952 experiment, seedlings with stems buried ¼, ½, or ¾ of their length grew definitely better than controls which were planted with the root collar at ground level. Trees planted with ¼ of the root length exposed showed a lower average current height growth, but the differences were not significant.

Current height growth was again measured in late November 1953 and results combined with the 1952 figures for analysis (Table 5).

Current height growth of the deep-planted seedlings continued significantly better at the end of two years. Current height growth as determined on the two exploratory tests of 1950 (Fig. 1) and 1951 suggest that the initial increased growth due to deep planting is probably not maintained much beyond the second or third year. However, accumulated current annual growth for the 1951 experiment shows that the beneficial effects of deep planting were still being reflected after a period of three years (Fig. 2).

The 1953 test confirmed the results of the earlier tests. Height growth was significantly better the deeper the seedlings were planted (Table 6). Although the larger seedlings put on more height growth, the relative overall trend was about the same for both size classes. In all tests there has been an unmistakable tendency of loblolly pine to grow better when planted deep than when planted "correctly," with root collars at about ground level.

Effects on root system.—Several European investigations, as reported by Toumey and Korstian (*6*), state that poor results are

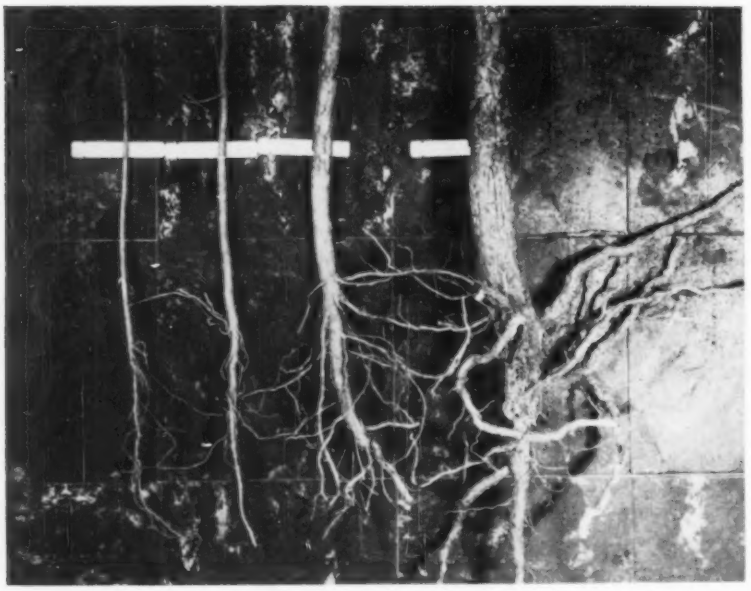

FIG. 3.—Comparative development of loblolly pine roots on seedlings planted with ½ of their stems buried, one to four years after planting as 1-0 stock. Labels placed at original groundline are ¾" × 3½". Note lack of adventitious roots above original root collar.

TABLE 6.—CURRENT HEIGHT GROWTH OF LOBLOLLY PINE SEEDLINGS, 1953 TEST.

	Depth of planting				
	Correct	⅓ stem buried	⅔ stem buried	Buried to tip	All depths
	Inches				
Large	5.8	6.5	6.1	6.9	6.32
Small	4.1	4.7	5.7	5.4	4.97
Mean of both sizes	4.95	5.60	5.90	6.15	5.64

LSD at 5% = .987; 2% = 1.189; 1% = 1.331.

likely to follow the setting of seedlings too deep. These investigations were mainly concerned with Norway spruce and Scots pine, both of which are shallow-rooted species. Deep planting of Norway spruce in Austria left only dead roots of the original system three to five years after planting. Investigators using the same species in Prussia found that 1-0 seedlings could be safely set considerably deeper than their original position in the nursery seed bed. This was construed as indicating that a 1-year plant had the capacity for changing its root system without losing any part of it.

In the present tests, no noticeable effect to the root system of the deeply buried loblolly pine seedlings has been observed on sampled trees which varied in age from one to four years. The original root system had remained; there was no evidence of new rootlets forming above the root collar, and no evidence of decay (Figure 3). The main center root had continued to elongate and penetrate further into the soil while the lateral roots had continued to develop horizontally, although at a slightly greater depth than those of shallow-planted trees.

Discussion

Observations of tree planting operations on upland Piedmont soils over a period of more than two decades had led the senior author to conclude that loblolly pine seedlings must behave in a different manner, when planted with the root collar below the ground surface, than some other species mentioned in the literature, or than loblolly pine in other parts of the South. These observations were largely confirmed by the results of all four tests reported herein. There was consistent, and in most instances statistically significant indication that current height growth was greater for trees planted "too deep" than for trees planted "correctly."

An optimum depth of planting was not specifically determined, but in the two main experiments the seedlings planted with ⅓ or ½ of the stem buried although growing better than the controls did not grow so well as those planted at other depths. The reason for this behavior is not evident.

Survival was not significantly affected by the depth to which the trees were planted, but survival was decreased by exposing a quarter of the root system. This is merely additional warning that shallow planting is risky business.

Reports about death of root systems and introduction of a creeping basal rot as a result of partly burying the stem were not sustained by these experiments with loblolly pine. There was, however, a noticeable change in the periderm layer on the older buried stems. The underground stem portion was covered with a smooth brownish layer of cork cells, similar to the covering of true roots, as contrasted to the rough, thicker periderm of the exposed stem. Bark does not normally accumulate on roots as it does on stems due to the rapid decay of dead tissues beneath the soil. The phloem layer of the buried stem was of approximately the same thickness as the exposed stem, but appeared to contain a higher concentration of starch grains. Chlorophyll was no longer present in the buried stem.

The effect of deep planting of loblolly pine on other than upland Piedmont soils apparently has not been investigated. However, the results of these experiments would seem applicable to most well-drained sites elsewhere in the natural range of loblolly pine. On wet sites deep planting of loblolly pine should not be attempted until further research has demonstrated whether this practice is safe. Cold,

wet soils may produce the same results as reported by European investigators.

Deep planting appears to stimulate current growth of pond, Virginia, and shortleaf pines in the same manner as of loblolly. In a test installed in the spring of 1954, the growth and survival at the end of the first growing season was as follows:

Current growth in inches	Pond pine	Virginia pine	Shortleaf pine
Correctly planted	10.62	12.24	12.90
½ stem buried	14.17	13.21	15.36
Survival in percent			
Correctly planted	98.3	100.0	86.7
½ stem buried	100.0	96.7	80.0

Summary

Four separate tests, two exploratory and two main experiments, were conducted on the Hill Demonstration Forest, Durham County, N. C., to determine the effect of various planting depths on survival and growth of 1-0 loblolly pine seedlings. All plantings were made on well drained upland Piedmont soil.

Results were as follows:

1. Survival was not significantly affected by any depth of stem buried, but those seedlings with ¼ of the root system exposed did show significantly greater mortality in the 1952 test and grew less in height.

2. In all deep-planted loblolly seedlings, current height growth was stimulated and growth differences continued to be significant for a period of two years after planting. Pond, Virginia and shortleaf pines indicate a similar response to deep planting.

3. Degree of stem burial had no effect on the original root system; the deeply buried roots did not die, nor did new rootlets develop above the root collar on the buried stem. However, the buried stem section did show change in the periderm layer, but no internal changes were noted.

It appears that loblolly pine is benefited by deep planting on well drained sites. This is of considerable practical significance in machine operations where the natural tendency is to plant deep and where the chance of forming "U-roots" from deep setting is remote. Even in hand-tool planting loblolly pine may be set with the root collar somewhat deeper than occupied in the nursery, provided this is done without curling the root system.

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KEYNOTE speakers of the opening general session. DeWitt Nelson of Sacramento, Calif., E. P. Stamm of Portland, Ore., and Arthur W. Greeley of Juneau, Alaska.

Decay Following Thinning of Sprout Oak Clumps

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MULTIPLE-STEMMED sprout clumps are characteristic of second-growth oak stands. It is often necessary to thin these clumps at an early age if we wish the stands to be made up of single stems relatively free of decay. Stands of sprouts not treated early are likely to consist largely of sprout clumps. The present study was undertaken to determine the size and type of cut that should be made when thinning sprout clumps to single stems without creating an undue decay hazard to the remaining stems. Thinning sprout clumps has been discussed in earlier publications (*2, 3, 4, 5*). Previous studies with stump-sprout oak stands showed that approximately 22 percent of the stems in 35-year-old stands were decayed (*4*). For the most part, this decay progressed into the sprout from the old decaying parent stump. Attempts to convert these stands to single stems would have increased the amount of butt rot still further.

Where multiple-stemmed sprout clumps are present, a common practice is to thin these to single stems during fuelwood, distillation wood, mine prop, or fence post operations. In the past, such thinnings have been done with little or no regard for the future health of the remaining stem. Large wounds with rough edges and stubs were common. These wounds had little chance of healing before decay fungi entered and advanced into the remaining stem.

In removing one stem of a twin-sprout clump, two questions should be kept in mind. First, will the removal of one sprout benefit the growth of the remaining stem (*1*) and, second, will the wound made in removing the stem create a decay hazard to the remaining tree. The investigation reported here was concerned primarily with the latter.

Companion sprouts 2 inches d.b.h. or smaller are generally safe to remove without leaving a large wound or exposing enough heartwood to create a decay hazard to the remaining sprouts. Sprouts separated by a wide saddle of sapwood are also considered safe to thin (Fig. 1*A*).

In order to determine the rate of healing of wounds, and to study the decay hazard from the cut surfaces of severed companion sprouts, a study was started in 1935 on the George Washington National Forest in Virginia, the Monongahela National Forest in West Virginia, and the Mont Alto State Forest in Pennsylvania.[1]

The following methods of thinning sprout groups or twins were tested: flush-cut at crotch with a saw; flush-cut at crotch with an ax; girdled breast high; cut breast high; horizontal saw cut at crotch; cut with ax 2 inches above crotch, leaving a short stub; dead stubs left standing; and check trees, no treatment.

In addition to taking data on the above methods of removing companion sprouts, a comparison was also made between the healing rate and the decay hazard created in removing large and small sprouts from a group. No attempt was made to thin the same number of sprout clumps for each species of oak studied. Rather, all clumps suitable for thinning within any one study area were used, regardless of species. Consequently, more clumps of some species were thinned than others. In descending order of abundance the species thinned were: white oak (*Quercus alba* L.), chestnut oak (*Q. prinus* L.), scarlet oak (*Q. coccinea* Muenchh.), black oak (*Q. velutina* Lam.), and northern red oak (*Q. rubra* L.). Since only a few red oak clumps were thinned, they have been included with the scarlet oaks in the analysis of results.

In studying decay transmission from thinning wounds, it is important to make certain that the remaining stem does not already have decay that originated from some other source. Trees with obivous butt scars, open stump wounds, swollen bases, or other indications of possible decay were not included in the study. Cut companion sprouts containing decay were eliminated from the study. Sprout groups included in this study were all believed to be sound at the time the study was initiated, and it is unlikely that any of them decayed from sources other than the thinning wound after the study was started.

Results

Although the present study was not established primarily to determine growth, data gathered on treated versus non-treated sprout groups (Table 1) show that the average diameter growth made by treated trees on all plots studied was about one inch more in 16 years than that for untreated trees. If we compare only the growth responses of the treated clumps in Pennsylvania with the untreated clumps in Pennsylvania, we find that the increased growth for the treated trees was only 0.4 inch or 31 percent greater. Gruschow (*1*) working in Virginia found similar but somewhat greater growth responses in 25-year-old white oak after observing the thinned clumps for 6 years. In the untreated clumps the crop trees were designated, measured, and numbered but no cutting was done. There was greater variation in growth between plots than between treated and untreated trees, indicating that age, spacing, species, and other factors are also important in growth.

Table 2 shows the relation be-

[1] Pennsylvania plots established by Bailey Sleeth, formerly with the Division of Forest Pathology.

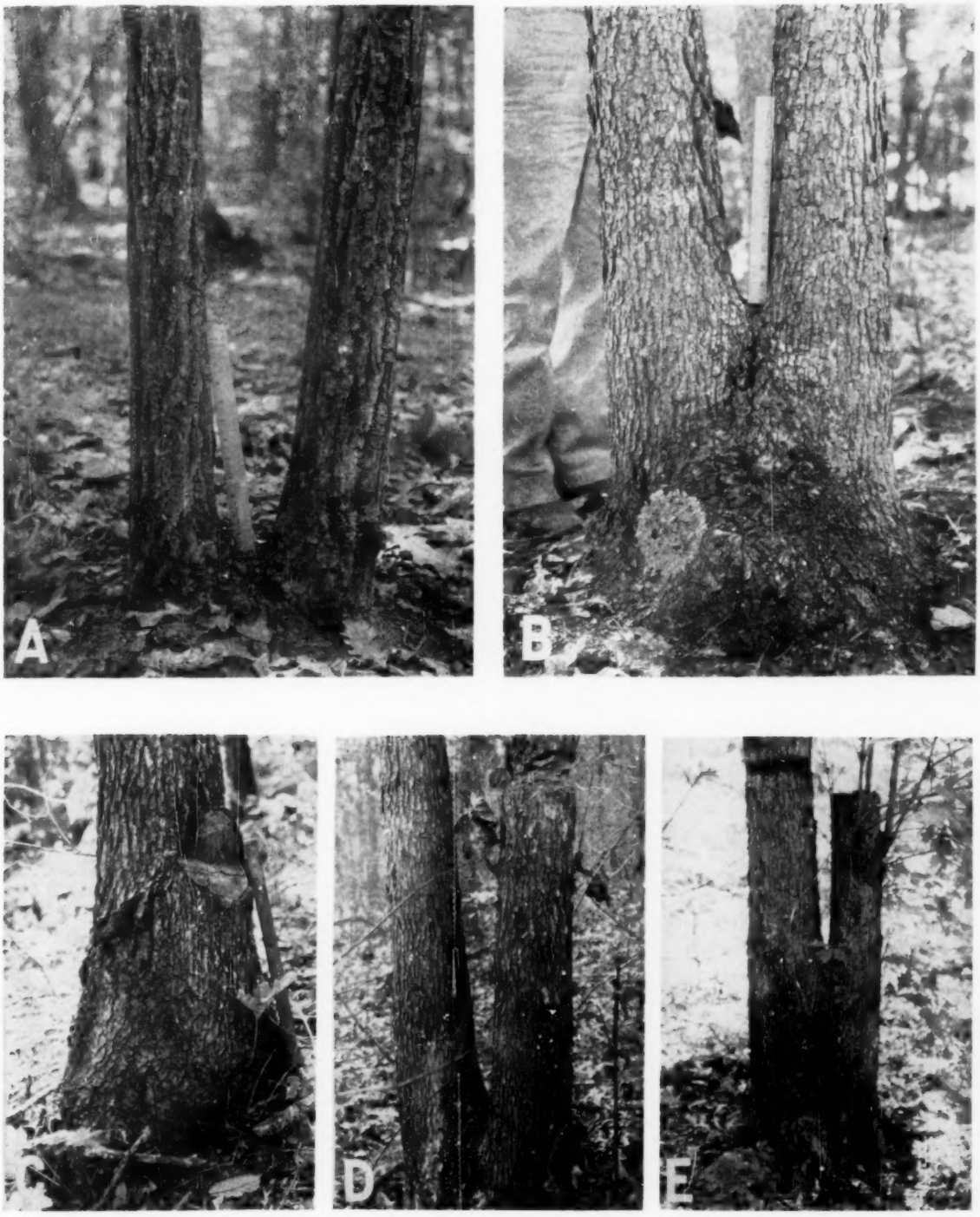

FIG. 1.—*A*. Chestnut oak sprouts with a wide low U-shaped crotch. One of these twins can be removed without creating a serious decay hazard. *B*. White oak sprouts with a high V-type crotch. Treat this type twin as a unit, either cut both or leave both sprouts. *C*. Stubs of this type should be avoided, as it takes many years for them to heal over. *D*. One of twins girdled as a method of thinning. *E*. One of twins cut at three feet as a method of thinning. It was hoped that the methods used in *D* and *E* would be similar to natural dying.

TABLE 1.—MEAN DIAMETER GROWTH OF ALL OAKS, OVER 16-YEAR STUDY PERIOD.

Treatment and area		Trees		Diameter growth
		Number		*Inches*
Clumps reduced to single stems:				
Stultz Gap-1 (Va.)		95		2.3
Stultz Gap-2 (Va.)		44		2.4
Liberty Furnace (Va.)		25		1.5
Dula Road (Va.)		39		4.1
Trainer School (W. Va.)		65		1.3
All (Va. and W. Va.)	Total	268	Avg.	2.3
43-A (Pa.)		18		1.7
43-B (Pa.)		16		2.2
43-D (Pa.)		28		1.7
43-E (Pa.)		25		1.7
43-F (Pa.)		19		1.5
All (Pa.)	Total	106	Avg.	1.7
All (Pa., Va. and W. Va.)	Total	374	Avg.	2.1
Clumps left untreated:				
43-C (Pa.)		10		1.4
43-G (Pa.)		11		1.2
All untreated (Pa.)	Total	21	Avg.	1.3

TABLE 2.—FLUSH-CUT THINNING WOUNDS CLOSED AFTER 16 YEARS, BY WOUND WIDTHS

Original wound width	Wounds closed after 16 years
Inches	*Percent*
0.5 to 3.0	100
3.1 to 4.0	91
4.1 to 5.0	69
5.1 to 6.0	43
6.1 to 7.0	30
7.1 to 8.0	14
8.1 and over	0

tween wound width and the percent of wounds closed after 16 years. The measurements were made only for those trees where a flush-cut was made. Wounds 3 inches wide were all closed and those 8.1 inches and wider were all open. In Table 2, the type of crotch or factors other than width of wound are not taken into consideration. Figure 2-*A* and *B* show a 3-inch-wide wound open at 2 years and closed after 7 years, whereas a wound 6 inches wide was still open after 16 years (Fig. 2-*C* and *D*).

The percentage of decayed trees in each study area by crotch type is given in Table 3. Since there are all graduations of crotch type, from a very wide U to a very sharp V, no arbitrary classification will entirely separate one from the other. Under the classification used in Table 3, there were more than 8 times as many V-type crotches included in this study as U-type crotches. For wounds more than 3 inches wide, 26 percent of the trees with V-type crotches were decayed, as compared with 13 percent for U-type crotches. Even in the larger wounds considerable differences existed between areas. The Stultz Gap-2 and the Dula Road areas contained younger trees, which may account for the smaller percentage of decayed trees.

The percentage of decayed sprouts in each study area by treatment ranged from 0 for the control trees to 36 percent where a short stub was left (Fig. 1-*C*). Thirty-four percent of the trees were decayed when the surplus sprout was removed with an ax-made flush-cut. The ax injured the bark around the wound, causing it to die back before healing started. In cases where the surplus stem had died of natural causes, only 7 percent were decayed. It was hoped that by girdling the surplus sprouts (Fig. 1-*D*), or cutting them off at 3 feet (Fig. 1-*E*), natural dying could be simulated. The results show these methods of removing companion sprouts were intermediate between naturally dead sprouts and methods favorable to a high incidence of decay. Some of the girdled stems and those cut at a height of 3 feet put out sprouts and remained alive down to the crotch for a number of years. The horizontal saw-cut represented in plot 43-E resulted in only 12 percent of the trees becoming decayed, which was a distinct surprise. It was believed that a cut of this type would be very similar to leaving a short stub. Smaller wound size and absence of loosened bark made these wounds less objectionable than larger flush-cut wounds. Twenty-three percent of the remaining stems in all thinned sprout clumps were decayed, showing that the removal of surplus sprouts creates a very serious decay hazard. The average extent of decay for infected sprouts was 37 inches, with a range from 15 to 108 inches.

The affect of wound width on the incidence of decay from wounds caused by removing companion sprouts is shown in Table 4. In general, the incidence of decay increased as wound width increased. Insufficient trees were thinned in the 9.1 inches and over class to get a truly representative sample. Figure 2-*E* shows decay entering a scarlet oak sprout from a wound 6 inches wide.

TABLE 3.—PERCENTAGE OF TREES DECAYED, BY CROTCH TYPE[1]

Study area	U-crotch[2]				V-crotch			
	Wounds under 3 inches wide		Wounds 3 inches and wider		Wounds under 3 inches wide		Wounds 3 inches and wider	
	Trees cut	Remaining sprout decayed	Trees cut	Remaining sprout decayed	Trees cut	Remaining sprout decayed	Trees cut	Remaining sprout decayed
	Number	*Percent*	*Number*	*Percent*	*Number*	*Percent*	*Number*	*Percent*
Stultz Gap-1	0	....	1	0	0	....	42	29
Stultz Gap-2	0	....	0	....	25	4	19	11
Liberty Furnace	0	....	0	....	5	20	20	30
Dula Road	0	....	3	0	4	25	16	6
Trainer School	0	....	0	....	1	100	33	48
43-D	0	....	3	0	0	....	29	17
43-E	3	0	7	0	4	0	17	24
43-F	0	....	10	30	0	....	13	31
All areas	3	0	24	13	39	10	189	26

[1]Includes all cuts except those leaving 3-foot stub or girdled.

[2]A U-crotch is 6 inches or more wide 12 inches above the crotch, and the crotch is less than 6 inches above the ground.

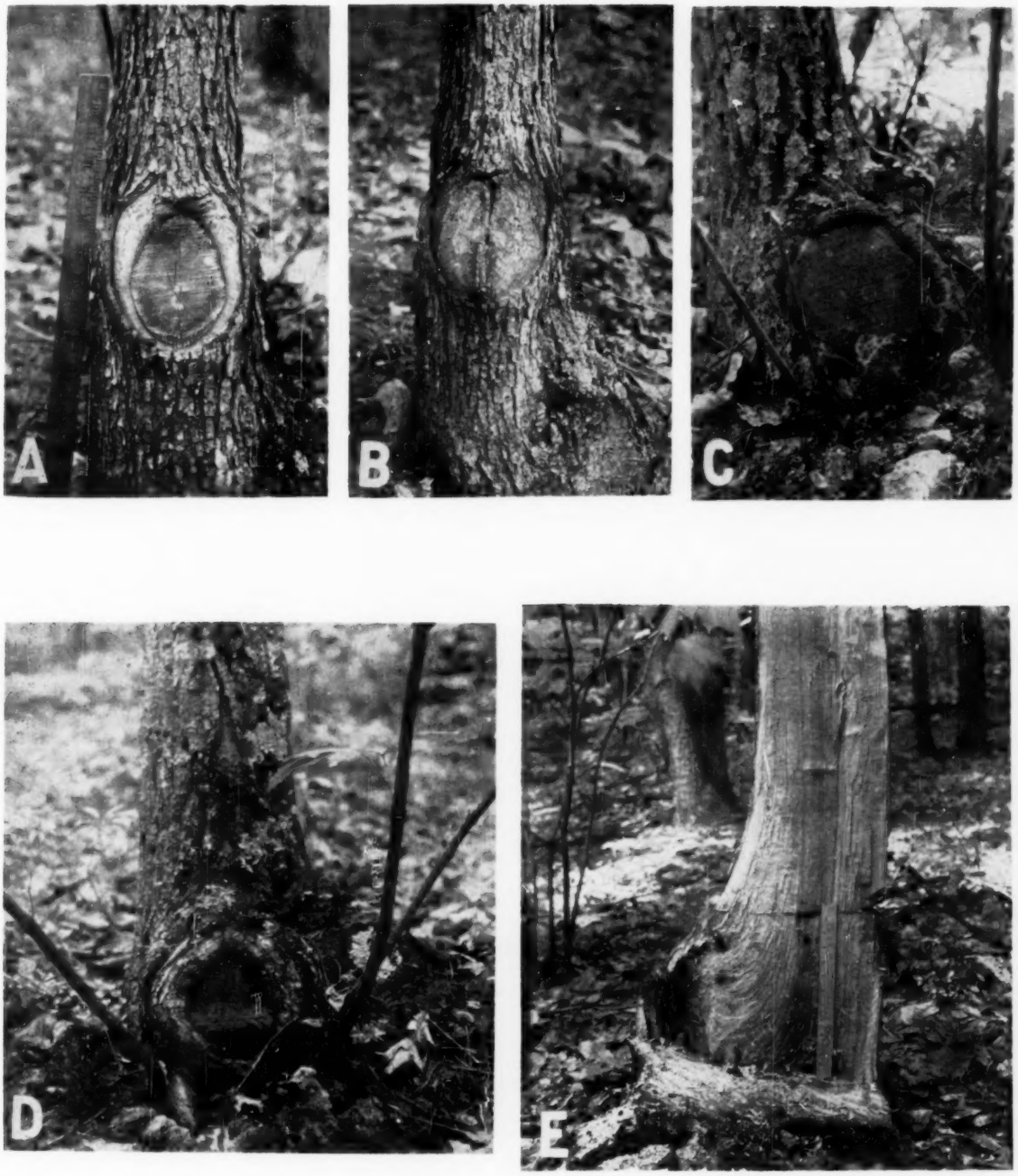

FIG. 2.—*A*. A 3-inch-wide flush-cut wound beginning to heal 2 years after cutting. *B*. Same wound as shown in *A*, completely healed over in 7 years. *C*. A 6-inch flush-cut wound showing no signs of healing after 2 years. *D*. Same wound as shown in *C*, still open after 16 years. *E*. Dissected stump showing decay entering from stub.

TABLE 4.—PERCENT OF TREES DECAYED IN EACH TREATMENT, BY WOUND WIDTHS[1]

Treatment	Wound width classes (inches)							
	0.5 to 3.0		3.1 to 6.0		6.1 to 9.0		9.1 and over	
	Total	Decayed	Total	Decayed	Total	Decayed	Total	Decayed
	Number	*Percent*	*Number*	*Percent*	*Number*	*Percent*	*Number*	*Percent*
Dead, left standing	—	—	4	0	—	—	—	—
Flush-cut, at crotch, with saw	35	8	58	16	32	34	11	18
Flush-cut, at crotch, with ax	1	0	35	26	22	41	4	75
Horizontal saw cut	7	0	11	18	8	25	5	0
Cut 2 inches above crotch, leaving a short stub	3	33	18	39	2	50	2	0
All treatments	46	9	126	21	64	36	22	23

[1]Does not include clumps where surplus stems were girdled or cut breast high, since wound widths could not be measured.

Recommendations

1. Oak clump sprouts 3 inches d.b.h. or smaller can be thinned in any convenient manner without creating a decay hazard.

2. Clumps composed of sprouts larger than 3 inches can be thinned without creating a decay hazard if the crotch is of the wide U-type.

3. In removing surplus sprouts of any diameter, the cut should be made with a saw to minimize bark loosening, and the wound should be kept as small as possible by making a horizontal or slightly sloping cut. Never leave a stub.

4. Clumps of sprouts larger than 3 inches in diameter having a V-type crotch should be treated as a unit, either all cut or all left.

Summary

Three hundred and seventy-four sprout clumps of mixed oak species were thinned by removing one or more stems from the clumps by methods commonly used in fuelwood, mine prop, or non-commercial thinning operations.

The diameter growth of all the residual trees from which companion sprouts were removed was 69 percent greater than unthinned ones, even though no attempt was made to thin the study areas systematically. Comparing Pennsylvania treated trees with close-by untreated trees, the growth was only 31 percent greater.

Thinning wounds from trees larger than 3 inches d.b.h. remained open for many years, exposing the remaining stem to decay.

Forty percent of all wounds measured were still open after 16 years.

A larger percentage of the stems were decayed where a short stub was left, or where large stems were removed with a flush-cut using an ax, than where the wound was small or flush-cut with a saw.

Twenty-three percent of the sprouts remaining in thinned clumps were later found to be decayed. The average height of decay for infected sprouts was 37 inches.

Girdling surplus sprouts or cutting them at 3 feet did not reduce the decay hazard enough to be of practical value.

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Damage to Paper Birch by Red Squirrels in Alaska

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THE DAMAGE to be described was first recognized by the writer and R. R. Robinson, Area Forester, Bureau of Land Management, U. S. Department of the Interior, on June 10, 1952, when they visited Indian Creek valley (approximately 61° N. latitude, 149½° W. longitude) on the north side of Turnagain Arm, at the head of Cook Inlet, in Alaska. Neither had previously seen similar injury to paper birch, nor had it been reported by field officers of the bureau. At the time only general observations were made. It was obvious that a large proportion of the birch trees in the young stand (trees mostly 2 to 3 inches in diameter) exhibited horizontal girdles about ¼ inch wide. The girdles exposed the xylem and often extended nearly, or completely, around the stems. Injured trees usually had a number of girdles scattered along the stems, up to a top diameter of about 1 inch. Many of the damaged trees were dead.

Because of the striking and evidently unusual nature of the damage, field men of the Bureau of Land Management were requested to report any new examples that came to their attention. In the summer of 1954 comparatively fresh girdling of paper birch was found near Eagle River, a tributary to Knik Arm, some 10 miles northeast of Anchorage. A few damaged birches were also observed near Bedlam Lake, in the northwestern part of the Kenai Peninsula (Bedlam Lake drains through Bedlam Creek to Chickaloon Bay, on the south side of Turnagain Arm). The heaviest damage so far known is found in valleys on the north side of Turnagain Arm, especially Indian Creek valley and Bird Creek valley.

On August 26, 1954 Terry Fieldhouse, forester, Bureau of Land Management, ran two transects, each 10 chains (660 feet) long and 13.2 feet wide in stands showing damage. He also collected a number of injured stems for examination in the laboratory.

Nature of the Injury

Damage to the paper birch stems consists of girdling, either partial or complete, as illustrated in Figures 1 and 2. Some of the injured trees have few girdles, others have many. The distance between girdles on the trees varies from about 2 to 17, or more, inches; the average distance on a number that were measured was 9 inches. The thin and papery outer layers of the periderm are cut by the teeth of an animal, permitting the periderm to roll, or be rolled, back in a tight coil, exposing the tissues below. As a rule the coil of periderm remains attached to the tree. The initial cut in the periderm at the beginning of each girdle is slightly

FIG. 1.—Showing horizontal girdles on paper birch stems, approximately ¼ natural size. The stem on the right has two old girdles (originating in the spring of 1951), now partially callused over; the other girdles originated in the spring of 1954. Note the coil of periderm attached at the terminal point of each girdle. Specimens collected in August 1954.

rounded, about 1.5-2.0 mm. wide, and slants horizontally inward to the xylem. The width of the periderm band removed is remarkably uniform, averaging 0.2 inch (0.5 cm.). The underlying light yellowish-brown or brown tissues of the secondary phloem and cortical region are removed down to the xylem. This removal is achieved by a chiseling action of the teeth of the animal, there often being tooth marks on the xylem. The secondary phloem and cortical tissues are usually not removed from the full width of the exposed band, but only from a channel 0.15 to 0.17 inch (0.3 to 0.4 cm.) wide. Examination of the injured stems, and from reports of observers, leads to the conclusion that the damage occurred during the dormant season, evidently in early spring.

Cause of the Injury

Available evidence points to the red squirrel (*Tamiasciurus hudsonicus* Erxleben) as the cause of the injury. Comparisons of the teeth marks on girdled birch stems with red squirrel skulls were made by Dr. John L. Buckley, associate professor of Wildlife Management in the University of Alaska, and by the writer. The incisor teeth of the red squirrel fit the teeth marks on the stems very well.

The literature contains many references to injuries of forest trees by red squirrels but the writer is not aware of any report describing damage similar to that reported here. Hatt (*2*) figured branches of sugar maple from which the bark had been spirally removed by red squirrels. He also mentioned (p. 99) strips of bark . . . "four to six inches long, and about one-third of an inch wide" removed from sugar maple by red squirrels. Fritz (*1*) reported stripping of bark from young redwood trees; the bark strips removed were narrow, not over one inch wide, and varied in length from about 4 inches to over 12 inches. The horizontal nature of the girdles on paper birch is regarded as a result of the character of the periderm itself, which contains alternate layers of radially narrow and broad phellum cells. It is practically impossible to remove paper birch bark in longitudinal or spiral strips, but stripping in horizontal bands is easy. Pearce (*5*) presented useful data on the average width of the incisors of red squirrels and the average width of the tooth marks left by these animals.

Populations of red squirrels in the North are known to show a periodicity which is correlated with the occurrence of heavy seed years in spruce (*3, 4*). It is also known that following peak seed years in spruce forests, damage by red squirrels is particularly extensive because they then have to resort to other food sources of lower nutritional value—materials such as bark and buds which Lampio refers to as "stuffing materials." In 1951, one year before the injury reported here was first observed, there was an extraordinarily heavy seed crop on spruce in Alaska. Cone production was so heavy that the tops of many trees were bent over, and some were broken off by the excessive weight.

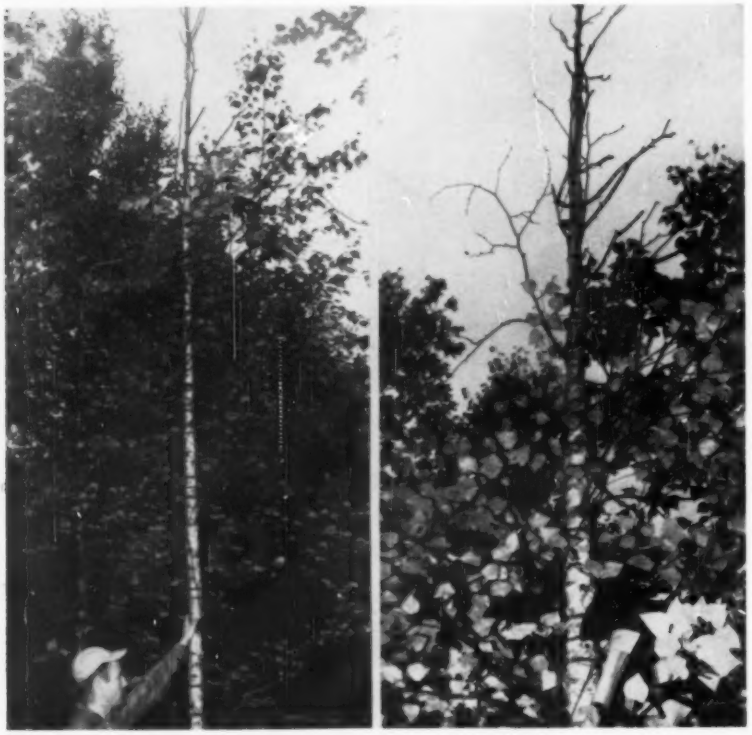

FIG. 2.—Dead paper birches showing numerous girdles which appear as dark, narrow, horizontal bands. Birchwood, Alaska, August 1954.

Extent of the Injury

In an effort to learn the extent of the injury transect samples were obtained in two dense stands of paper birch reproduction, about 28 years of age. Evidently both Alaska paper birch (*Betula papyrifera* var. *humilis* [Reg.] Fern. & Raup) and Kenai paper birch (*Betula papyrifera* var. *kenaica* [W. H. Evans] Henry) were represented. In the Bird Creek area (27 miles southeast of Anchorage) associates of the paper birch included Sitka spruce (*Picea sitchensis* [Bong.] Carr.), mountain hemlock (*Tsuga mertensiana* [Bong.] Carr.) and willows (*Salix* spp.). In the Birchwood area (19 miles northeast of Anchorage) associates of the paper birch included white spruce (*Picea glauca* [Moench] Voss), willows, and quaking aspen (*Populus tremuloides* Michx.).

In the Bird Creek area there were on the average a total of 1,625 paper birch trees per acre, of which 1,235 (or 76 percent) were injured or dead. Most of the injured trees that were still alive were obviously

in poor condition; the tops of some had broken off at the point of the girdle and had branched at the break. In this connection it is of interest to note that in 1954 the foliage of most of the girdled trees had begun to show autumnal coloration on August 26. Of the undamaged trees only a few badly suppressed individuals showed a change in foliage color on this date. Damage in the stands on Bird Creek was very heavy, varying on individual plots from 57 to 88 percent of the paper birch trees. A regular progression was noted in the percentage of girdled trees with increasing tree size, as follows:

Diameter class, inches	Total number of trees	Percentage of trees girdled
1	78	39
2	130	82
3	89	92
4	26	96
5	1	100
6	1	100

The estimated average height above ground of the lowest girdle was 3.5 feet (varying from 2 to 6 feet on individual plots. Girdling occurred up to a minimum top diameter of about 1 inch.

In the Birchwood area there were on an average a total of 3,285 paper birch trees per acre, of which 210 (or 6 percent) were injured or dead. Here damage was much less severe than on Bird Creek, varying on individual plots from 3 to 9 percent. The same general relationship between incidence of girdling and tree diameter that was encountered on Bird Creek was also observed in the Birchwood area:

Diameter class, inches	Total number of trees	Percentage of trees girdled
1	354	
2	183	5
3	94	21
4	23	43
5	3	66

The estimated average height above ground of the lowest girdle was 10 feet (varying from 8 to 14 feet on individual plots). Girdling occurred up to a minimum top diameter of about 2 inches.

Girdling is known to have been occurring since 1952 and it is probable that it also occurred at an earlier date. Dead tops were observed on some of the paper birches in Indian Creek valley in June 1952. Some callusing of incomplete girdles has been observed. Present evidence leads to the conclusion that locally this damage may assume serious proportions. The larger, dominant trees in a young stand are the ones most affected. Even if death does not result (and it commonly does), the girdles provide infection courts for fungi in a species which is particularly susceptible to decay.

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Pin-Pointing, a Surveying Technique for Foresters

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PIN-POINTING may be defined as the art of accurately locating ground points on aerial photographs, a technique which can be used to make low-cost land surveys. There are large groups of foresters using the technique to some extent, notably those in the Forest Survey, timber management men on the national forests, and some industrial foresters. However, there are other large groups, particularly administrative men such as the district rangers, who make little or no use of the technique, even though many of them use aerial photos to secure general information. This is regrettable because these are the very men who have the greatest need for time and money saving methods.

Pin-pointing originated with the photogrammetrists who needed land corner locations in the preparation of maps. At first the mappers tried to mark their corners before photographs were taken, by laying out lime or cloth strips to form a large cross on the ground at each important corner. This proved to be very expensive in the rougher forested areas. Pin-pointing subsequent to photography was the logical substitute. This required the mapper to carry his photos to a known corner on the ground and then by recognizing landmarks to find the same point on the photos and pin-point it. This was a difficult task in dense timber, but the mappers acquired great skill and learned to locate corners rapidly.

From this beginning foresters have learned to use the technique in two different though closely related ways. First, there is the obvious adaptation of the mapper's method of locating ground points on aerial photos. A second, more difficult technique is the above procedure in reverse, the location of photo points on the ground.

Locating Ground Points on Aerial Photos

This method requires only that the forester be able to orient his position on aerial photos and check this orientation by recognizing landmarks. Even so, the beginner finds it very difficult until he becomes accustomed to the scale of the photos and to the appearance of objects in a vertical view. With practice this orientation becomes easier and easier until it becomes like map reading.

A few general rules for orientation of an aerial photo and for pinpointing a ground point should be mentioned.

1. A photo-index, composed of a rough mosaic with the photo serial numbers prominently displayed, is usually quite helpful. The interpreter should consult his photo-index and determine the photo numbers of the stereo-pair covering his ground position.

2. Then with a field stereoscope he should examine the photos and locate his general position by means of topographic features that he can recognize. During this examination the photos should be held so that north on the photos corresponds with geographic north. A person who can "see stereo" without an instrument will find it easier to postpone using magnification until he does the final pinpointing. The sun and wind cause distractions by casting dark shadows and flapping the photos when a stereoscope is used in the field. Without a stereoscope a stereo-pair is merely held in one hand like a pair of playing cards and the distraction is avoided. However, this is a photo interpreter's "trade secret," requiring long practice in the control of eye muscles, and many people cannot do it.

3. With this done he should look for finer details around him. Having recognized one such detail he can use it to locate other details closer to his ground point, until he has found the tree closest to it. He progresses from the known to the unknown by reasoning such as this: "If this tree in the photo is the tree standing in front of me then this other tree must be the next tree in the photo." In this way he can walk from tree to tree, following his progress on the photo. With scales of 1:20,000 or larger, snags are often our best guides. With these scales down logs, small gullies, and patches of weeds are also useful for orientation. If infra-red film has been used it will help distinguish hardwoods from conifers, but the accompanying loss of detail in the shadows would in many cases make it of less value than panchromatic film.

4. Now that he is at the tree closest to the ground point the exact point on the photos may be found by determining the proportional distances between surrounding trees and the ground point, or by the intersection of lines between objects which cross at the ground point. If the ground point is located in a stand of dense timber where individual trees are indistinguishable, then the interpreter must find the nearest opening in the forest cover, locate this on his photos, and then tie in the ground point by measuring the bearing and distance to it.

5. After locating the photo point which corresponds with the ground point he takes a fine needle (a #9 is a good size) and with the aid of a stereoscope he punctures the emulsion at the indicated spot. To prevent making too large a hole, which would disfigure the photo, he should hold a finger under the photo and press the needle through only until the point is felt. To permanently record this location the photo is turned over and the needle hole is circled with pen and ink and annotated.

The following applications of this method of locating ground points will help to speed up and cut the cost of many surveys in rough, timbered country where costs would otherwise run high.

1. In making road surveys the preliminary location can be-

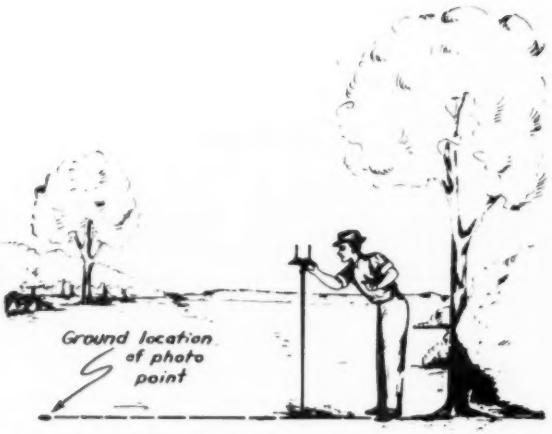

FIG. 1.—Photo point location by measuring a bearing and distance from a reference tree.

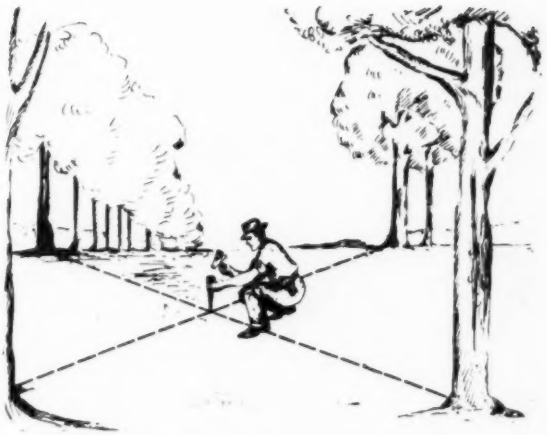

FIG. 2.—Photo point location by intersecting lines from reference trees.

mapped quickly without a ground survey by making a careful stereoscopic study and then marking the best route or routes on the photos with a red pencil. Then the photos can be field checked for soil and rock conditions and for grade, and the points where curves are made can be pin-pointed. These points, known to road engineers as "Points of Intersection," can be transferred to a map and the angles and distances measured. These can then be recalculated to make any desired changes and the final location can be staked by conventional methods. Going a step further, the location of forest roads may eventually be done entirely on aerial photos, followed by the pin-pointing of the final location on the ground. This type of reverse pin-pointing is described later.

2. This method is also useful for filling in the details on maps and for map correction, where these details are invisible on photos. Often minor roads, trails, and fences are invisible on photos, but they can be mapped by pin-pointing the bends and intersections in them. Once they have been pin-pointed in a few places the interpreter will be surprised to find that portions of what would otherwise be unrecognizable as a road or trail will begin to show up as very fine lines submerged in other detail.

3. The mapping of poorly marked mining claims is a difficult task in the rougher portions of our public lands. These claims are usually marked by unwitnessed piles of rock at irregular intervals without any kind of survey, other than a general description sometimes scrawled on a cigarette paper and cached in a tobacco can. It is a comparatively easy job to pin-point the corners after the first corner has been found. The corner locations may then be transferred to a map with a plotting machine.

4. The same procedure may be used in surveys of private lands in forested areas. Frequently a resurvey is needed to verify older surveys in the purchase of land tracts.

Locating Photo Points on the Ground

Pin-pointing is now coming into wider use as foresters replace the older timber cruising methods with the random selection of plots on aerial photos by statistical methods. The full possibilities of the technique are not being exploited, however, since not all of the profession is using it. Pin-pointing methods have recently been made a part of U. S. Forest Service timber management and forest survey handbooks, and in this field government foresters are taking the lead, doubtless because of their association with government mapping projects. The instructions show that Forest Service interpreters are progressing through a transition from the old ground survey methods to full use of pin-pointing techniques. For example, they suggest that the interpreter can identify only a few reference points on any photo and must rely on these as starting points for old style ground surveys to plot locations. This is a crutch which need be used only when dense stands prevent the identification of individual trees. It overlooks the fact that an experienced interpreter can usually proceed freely through wooded areas, recognizing nearly every object in his photos, subject only to the limitations given at the conclusion of this article.

To see how photo points are located on the ground let us say that we have selected at random a timber sample plot on one of our aerial photos, and have marked the spot with a red pencil. We wish now to locate this point in the woods. We find the general location of the area by looking at our photo index. Then we choose the shortest route to get to this general area by consulting a large scale map. Having reached the general area, we examine the photos stereoscopically. By studying the ridge and drainage pattern we then locate our position, and by compar-

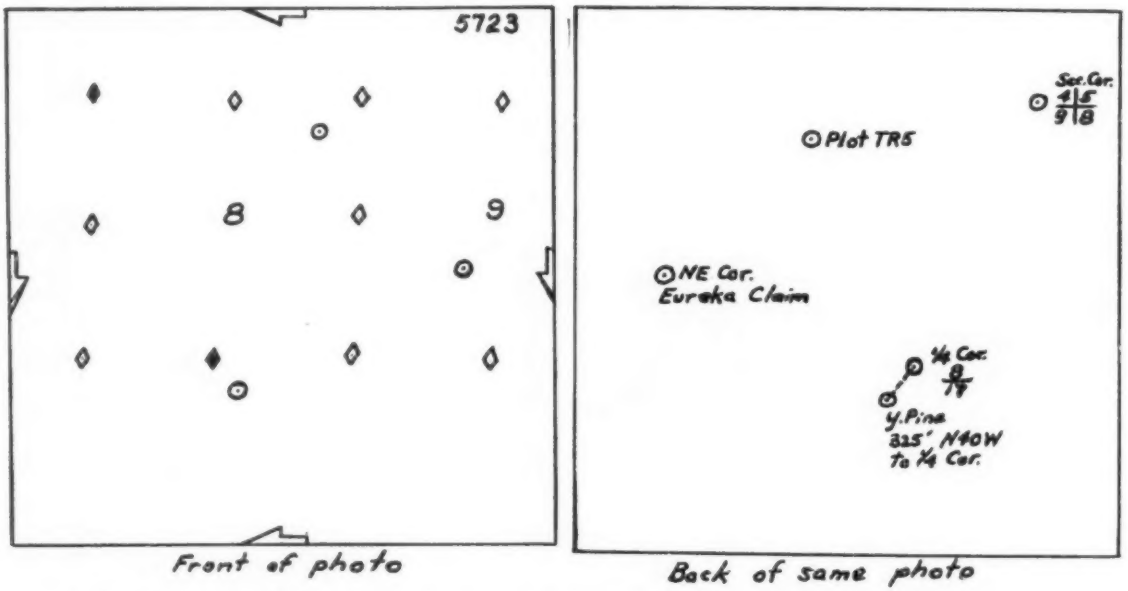

FIG. 3.—An example of notations on an aerial photograph to designate section corners and survey points.

ing the land forms in view with those in the photos we pick our way over the ridges and draws, stopping frequently to orient ourselves, until we are in the immediate vicinity of the plot location. From here on we operate much as we did in the first pin-pointing method described, except that in this case we must establish a ground point to correspond with the photo point. This is done by selecting a reference tree and then measuring a bearing and distance from it to the point, first on the photo and then on the ground, as shown in Figure 1. The same result can be accomplished by choosing lines between trees which intersect at the point on the photo, and then repeating the procedure on the ground, as shown in Figure 2. We can now set a stake at this point, which will serve as the plot center. We can relocate this plot by the same procedure at any time in the future as long as a majority of the trees are still standing. It can be done even after selective logging, although this requires considerably more skill. Even after clear-cutting, the stumps and groups of reproduction will give a clue to the location of the trees shown on the photos and will at times make relocation possible.

Little known but of potential value is an adaptation of this method developed by the author, which is a reversal of the mapper's original method of pin-pointing survey corners. This is done by transferring a land corner shown on a map to a photo by photogrammetric means and then locating the point on the ground. This can be done only when large scale aerial maps are available.

If a corner is difficult to find, due to a number of the reasons why land corners and lines tend to disappear in rough, timbered country, it can be relocated by pin-pointing. For example, heavy logging or forest fires can destroy corner markings. The destruction of large areas of spruce timber in the central Rockies will make land corners there hard to find in the future. Another common source of difficulty is the laxity of the original land surveyors in leaving sufficient markings. For instance, in southwestern New Mexico the original land surveys were made in the 1870's and the surveyers were afraid to blaze trees along section lines because the blazes might be used by the warring Apaches to track them down. The resulting confusion can be well imagined.

To find such a corner, the aerial photo is placed in a vertical sketchmaster, or mapping projector, and the ordinary use of the instrument is reversed by transferring the corner location from the map back to the photo. Since control points are usually lacking, the drainage pattern must be used as ground control. This is done with accuracy only when the drainage pattern has been mapped in its true, orthographic position by a mapping system such as the multiplex. Even then, accuracy will vary from "high," when the drainage is close to first order control, to "low," when it is between the lowest order control points on the map. Also, in addition to its association with control points, accuracy will be in direct proportion to the scale of photography. While the photo is in the sketchmaster it is well to mark the location of all the corners which have not yet been pin-pointed. Topographic displacements[1] in the photo make it necessary to adjust the instrument to

[1] A shift of position found in all aerial photos, but negligible in the center of a photo or where the terrain is completely level. Hills at the edge of a photo are seen from the side, so are displaced away from the center, while valleys are displaced inward. These displacements are in straight lines from the center of a photo and are called "radial line displacements."

match the drainage at each corner. This will place the section corners in irregular lines across the photo, the amount of displacement varying with the relief at each corner. The pin-pointed corners may be marked on the photo with a solid diamond, using a red pencil, and the corners not yet pin-pointed may be marked with an open diamond, as illustrated in Figure 3. Then the photos are taken to the field and the missing corners are located by reverse pin-pointing. However, when the ground point indicated by the photo point has been reached, it is very likely that the corner sought will not be in the indicated spot, because of slight map and plotting errors. The interpreter must then start a systematic search in ever-widening concentric circles around the indicated spot until it is found. The author has found that corners will frequently fall within a 300-foot circle.

The foregoing has demonstrated that when accurate maps and simple plotting instruments become available, a forester can place a pencil point anywhere on his maps and then locate the spot on the ground, within a few feet. This will aid the smokechaser tracking down those hard-to-find snag fires, the timber sales man trying to relocate the corners of a homestead or mining claim, or the engineer trying to relocate a road survey on the ground—to name but a few of the possible uses.

Limitations

There are some limitations which a forester must recognize in attempting to do pin-pointing. Rough terrain is easily pin-pointed because the drainage pattern is easily recognized. Level terrain is more difficult. Open timber is easy to work in and dense timber is difficult, because the patterns of tree groups are hard to recognize. Conifers are easy to work in, while hardwoods are difficult because they usually have a continuous canopy. Small photo scales, such as 1:40,000, are easy to interpret in scattered timber but not in dense timber. The larger scales are easier to use in all kinds of timber because more details show up. Points are hard to locate in large areas of uniform second growth; here the openings rather than the trees must be pin-pointed. The quality of the photos must also be considered. Small details and slight changes in the vegetation fade out in photos with high contrast. Photos having soft tones and low contrast are the easiest to interpret. This factor is sometimes overlooked when photos are produced for mapping purposes without considering that photo interpreters may also want to use them. The simplest photo to use would be one of high quality and large scale, showing a lone tree on a hill. The most difficult situation might be represented by level terrain with a dense stand, such as a hardwood swamp, shown in low quality, small scale photos.

Pin-pointing is a job which every forester who uses aerial photos should try from time to time, if only to improve his skill in photo interpretation. He should identify specific trees and objects, not the too-easy general areas. It is surprising how much more information a photo can give after the interpreter has made a ground inspection.

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H. Arthur Meyer (1908-1955)

H. Arthur Meyer, 47, professor of forestry at The Pennsylvania State University, died suddenly on December 3 of a heart attack.

Born January 14, 1908 at Interlaken, Switzerland, he was graduated in 1930 at the Federal Institute of Technology as a forest engineer, and in 1934 received the degree Doctor of Technical Sciences (Forestry).

He came to the United States in 1934 on a travel fellowship, and during 1935-1937 was professor of forestry in the Department of Forestry, Fish, and Game in Mexico. In the latter year he became instructor, later assistant professor, of forestry at Penn State, where he taught until 1943. In that year he became a naturalized citizen of the United States.

During 1943-1946 he was a forestry specailist in the Foreign Economic Administration in Venezuela and Costa Rica, returning to Penn State in the latter year as associate professor of forestry, and later advancing to full professor.

Dr. Meyer was the author of numerous technical and scientific articles in European and American journals. He wrote and read German, French, and Spanish, in addition to English. His special field of interest in forest management was mensuration and statistical methods. He was a frequent contributor to the JOURNAL OF FORESTRY.

He was co-author of the textbook *Forest Management,* published in 1952, and author of *Forest Mensuration,* published in 1953.

Notes

Pound Poles: A Profitable Market for Virginia Pine

In the Chesapeake Bay area of Maryland, the fishing industry has need for a forest product known locally as pound poles. These are long slender poles that are used to support fish nets in shallow parts of the Bay (Figs. 1 and 2).

Although the annual requirement for pound poles is not large, this market appears to be a good one for owners of pine stands. The preferred species in the Chesapeake Bay area is Virginia pine, which is usually thought of as good only for pulpwood or low-quality saw logs. (Some hickory pound poles are cut in northeastern Maryland. Hickory poles are often demanded where longer poles of greater strength are needed.)

Trees that are suitable for pound poles are generally similar to those that meet specifications for piling, with one exception—size. Butt diameters for pound poles range from 4 inches to about 9 inches. The poles are cut to a 1- or 2-inch top. Lengths may vary from less than 30 feet to as much as 50 feet. Straightness is very important. Buyers insist on a minimum of sweep or crook.

In view of these requirements, one might think that the better trees in a stand would be cut, which is not desirable if quality is a factor in the final product. Yet buyers have found that the best pound poles are usually obtained from intermediate trees in dense pulpwood-size stands of Virginia pine that are approaching maturity. Such trees are typically of small diameter, yet in height only a little less than the dominant trees. These trees usually have very small live crowns, and their stems are relatively clean.

A study of pound pole cutting.—A short study was recently completed of a typical winter cutting for pound poles in central Maryland. This study was made to evaluate relative returns, and to find out how the residual stand was affected.

FIG. 1.—Pound poles in use on the fishing grounds. These 50-foot poles are driven 10 feet into the bottom of the bay.

Since the stand was easily accessible, and the buyer wanted relatively long poles, he paid the top local stumpage price of $1.50 each. Shorter poles generally bring less, some only 50 cents each. The cutting was made in an undisturbed 40-year-old stand of Virginia pine. The buyer controlled tree selection, harvesting, and transportation, which is customary in this business.

This operation yielded 71 poles per acre. The poles averaged 6.5 inches d.b.h., and 45 feet long to a 1- or 2-inch top diameter. On a per-acre basis, the volume of suitable poles (to a 4-inch top) was equivalent to 3.93 stacked cords of rough 5-foot pulpwood.

Cutting pound poles out of this stand was good business for the owner. The cutting brought a stumpage return of $106.50 per acre. If these same trees had been cut for pulpwood at the current price, the owner would have received less than $12 per acre. And after cutting, the stand still had a pulpwood stumpage value of $60 per acre. Thus by taking advantage of the pound-pole market the owner more than doubled the potential stumpage return of his land.

Profit—and no bad effects.—The stand was on a better-than-average pine site, and it was well stocked. These factors induced keen competition for growing space. This resulted in the occurrence of many tall, slender, straight stems that were ideal as pound poles. However, they would have contributed little bulk-product volume—less than 4 cords of pulpwood per acre.

No harmful effects from this cutting were noted. A few small suppressed trees were cut to permit dropping the pole trees. Except for these and the fresh stumps, the appearance of the stand was scarcely altered. It is doubtful that the risk of windfall was increased, since the canopy was so little disturbed.

FIG. 2.—Pound poles drying on the beach. The darker poles in the foreground have been pulled up for drying after a season of use. The lighter poles beyond them are new poles. With proper care the poles will last for 5 years.

It is conceivable that a pre-cutting for pound poles might not be wise in Virginia pine stands that are being held for saw log production. Especially in younger stands on the better sites, some of the trees cut might be those that would have been selected for saw log crop trees, or for piling. But in stands being grown for pulpwood only, this would not be of much consequence.

It was concluded that a cut for pound poles is a very desirable one for Virginia pine owners to consider. The returns per acre for stumpage can be large, and harmful effects are unlikely. Cutting pound poles can substantially increase the total returns possible from suitable stands. In the example described, the stand volume exceeded 20 cords per acre even after the cutting—and that is ample to interest pulpwood buyers.

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Loblolly Seedling Survival After Hardwood Control by 2,4,5-T

Loblolly pine seedlings can be safely planted promptly after hardwood control with low-volatile esters of 2, 4, 5-T. This conclusion, plus some interesting data on reactions of seedlings to drought, competition, and occurrence of insect attack, came to light in a recent study in east Texas.

In December 1953, three treatments were applied to a dense stand of hardwood saplings and poles (6,500 stems per acre) near Nacogdoches, Texas. On three tenth-acre plots the basal 18 inches of all stems was sprayed to the point of runoff with a solution made by dissolving 1 gallon of 2, 4, 5-T (propylene glycol butyl ether ester, 4 pounds acid equivalent) in 16 gallons of diesel oil. On three other plots the hardwoods were cut close to the ground and the same 2, 4, 5-T solution was painted on the stumps to prevent sprouting. On a third set of three plots, the hardwoods were similarly cut but no silvicide was used.

From 2 to 24 hours after the hardwoods had been treated, 50 loblolly pine seedlings were planted on each plot; they were set 4 feet apart in randomly assigned rows. Exposure to silvicide was probably more severe than would occur on most such operations, since the hardwood stems were closely spaced and liberal applications had deposited large amounts of the solution on the ground.

In February 1954, 50 additional seedlings were similarly planted on each plot. It was expected that any toxicity from the silvicide would have dissipated during the 2-month interval between plantings.

On the basal-spray plots most hardwoods reached half or full leaf before toxic effects were pronounced, and the dying foliage partially shaded the pines throughout the spring and summer. On plots where the hardwoods were cut but the stumps were left untreated, a vigorous stand of sprouts developed by midsummer and gave the seedlings some shade. Where the hardwood stumps were treated with silvicide, pines had little or no protection from the sun.

The study was favored by a mild winter (normal for the area) and a moist spring, but encountered a severe summer drought. From May 26 to July 29, 1954, five light showers produced a total of 0.52 inch of rain. A storm of 1.95 inches at the end of July was followed by a 38-day period in which only 0.30 inch was measured. During the summer, maximum air temperatures in a standard louvered shelter reached or exceeded 100°F. on 55 days. A high of 112°F. was reached on July 25.

The failure of the silvicide to affect seedling survival was conclusively demonstrated before the drought became lethal. By June 28, survival averaged 92 percent for all December plantings and 93 percent for February plantings (Table 1); the differences are not statistically significant. For neither planting period was survival lower where the 2, 4, 5-T had been used—in fact, it was generally somewhat higher, particularly on the basal-spray plots.

Survival in November 1954, though greatly reduced by drought, confirmed the absence of significant differences due to time of planting. Seedlings planted in December grew somewhat taller than those planted in February. Obviously the 2, 4, 5-T had had no adverse effect on either the survival or the growth of the seedlings.

Survival on the basal-spray plots in November 1954 was 84 percent, significantly (at the 1-percent level) above the 53 and 57 percent survival averages for the other two treatments. While this difference had become statistically significant by the end of June, its substantial increase with continuing drought has important practical implications. Regeneration plans for dry sites might well take advantage of this ability of a dying overstory to improve seedling survival in dry weather.

Just why survival was so much higher on the basal-spray plots cannot be fully explained from this study. All three treatments evidently reduced the moisture drain of competing vegetation. Survival on other study areas subject to tree and grass competition ranged from 4 to 32 percent. Whether more moisture was available to the seedlings in the basal-spray plots than on the other treatments is unknown.

TABLE 1.—PROPORTION OF PINE SEEDLINGS[1] SURVIVING ON JUNE 28, 1954

Hardwood treatment	December planting	February planting
	Percent	*Percent*
Hardwoods cut, no silvicide	89	91
Hardwoods cut, 2, 4, 5-T on stumps	89	93
2, 4, 5-T as a basal spray	97	95
Average	92	93

[1]Based on 150 pines planted under each type of hardwood control treatment on each planting date: 900 in all.

Some insect infestation was noted on all plots. The pine webworm (*Tetralopha robustella* Zell.) attacked 18 percent of the seedlings on the basal-spray plots but only 4 percent of those on the other treatments. The difference is significant at the 1-percent level and substantiates other observations that the webworm is more apt to attack shaded than unshaded seedlings. The pine tip moth (*Rhyacionia frustrana* Comst.) was present but could not be associated with the hardwood treatments. Neither insect seriously affected seedling survival.

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A Simplified Technique for Securing Wood Samples

A simplified technique for securing wood samples for microscope examination has been devised by the author.

In the past, when it was necessary to obtain samples of wood of a tree for microscope examination, any one of the following three general methods was usually employed: (1) the tree itself was cut down and then cut into the desired sample size (*1*); (2) small, wedge-shaped pieces were cut out with a saw (*2*); and (3) sections of branches were used (*3*).

Each of these three methods has objectionable features; (1) it is not always feasible or desirable to cut down the entire tree; (2) many large wounds are apt to damage the tree; and (3) the branch wood may not be characteristic because of the extreme anatomical variation between branch and stem wood.

This new technique employs a Swedish increment borer as the sampler. After the core was removed, the hole was plugged with a small piece of beeswax having the same diameter and length as the core in order to prevent the entrance of pathogens and insects which might cause damage to the tree. Samples have been taken in this manner from a black walnut and a tulip poplar at biweekly intervals for a year with no apparent damage to the two trees (*4*).

The core or a piece of the core can be mounted, imbedded or unimbedded, on the sliding microtome and the desired sections cut. They can then be handled in the usual manner. Figures 1, 2, and 3 show photographs (enlarged about 100 times) of cross, radial, and tangential sections cut from a sample of sweetgum (*Liquidambar styraciflua* L.) which was obtained with an increment borer.

The borer method has several distinct advantages: (1) the same tree may be sampled over a long period of time; (2) the work involved is reduced to a minimum, thereby allowing a large number of trees to be studied at one time; and (3) since a number of samples can be taken from a relatively small area of the tree trunk with no apparent damage to the tree, the results can be statistically analyzed (*4*).

The core does not afford a large amount of wood, but it has been found to be adequate for most purposes.

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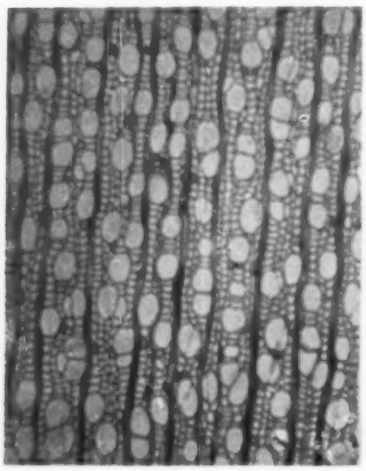

FIG. 1.—Cross section of *Liquidambar styraciflua*.

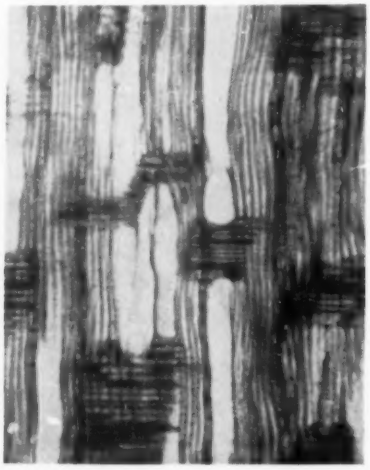

FIG. 2.—Radial section of *L. styraciflua*.

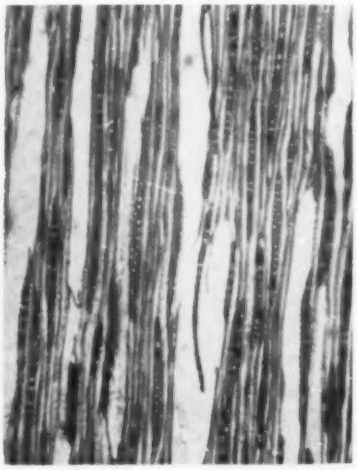

FIG. 3.—Tangential section of *L. styraciflua*. Enlarged about 100 times.

Points of View

Comments on the Variable Plot Method of Cruising

The comments by Mr. Grosenbaugh in the October 1955 issue of the JOURNAL[1] point up the fact that greater clarification is needed concerning the "plotless" method of cruising. To be more precise this new procedure is not "plotless" but rather a variable plot method. It is erroneous to state that the method merely consists of classifying a series of points as one would do in using a dot grid. The Winkelzähl method of Bitterlich states that any particular estimating point is the center of a series of plots of varying radii and corresponding concentric circular plot boundaries. The radius of each of these numerous plots would correspond to the maximum distance a tree could be from the estimating point and still contribute 10 square feet of basal area per acre to the variable plot. (Assuming a critical angle of 104.18′ and basal area factor of 10.) If a tree of a certain d.b.h. fell within its particular plot boundary it would then contribute 10 square feet of basal area per acre.

It then becomes obvious that the viewing and counting phase of the procedure using an angle gauge is merely a matter of establishing the various plot boundaries. The larger a tree's d.b.h. the longer becomes the radius or distance from the estimating point which will allow it to be counted. Or in other words the larger becomes the maximum plot at an estimating point.

A numerical example may serve to illustrate. We can assume that all the trees in a particular stand are in the 12 inch or 1 foot d.b.h. class. Using a critical angle of 104.18 minutes the maximum distance a tree could be from an estimating point and still be counted would be 33 times the d.b.h. In effect this establishes a circular plot of 33 feet radius. A circular plot of radius 33 feet has an area of .0785 acres. Suppose using the angle gauge ten of these trees were counted. This means that these 10 trees fell within the plot boundary. Using the appropriate basal area factor of 10 we would have an estimate of 100 square feet of basal area per acre. This of course is correct as can be proven by considering the estimating point as the center of a conventional plot. On this plot we have 10 trees of 12 inch d.b.h. or .785 square feet basal area each. The total basal area is 7.85 square feet per .0785 acres or 100 square feet as before.

Now we can go a step further and consider the stand as consisting of half 6-inch trees and half 12-inch trees. At each estimating point there would be two effective plots within which we could count the number of trees in each size class. It can be shown as done for the previous example that each tree on its individual plot contributes 10 square of basal area when expressed on a per acre basis. This can be carried further to consider a range of diameters as present in the stand. Each diameter would have its effective plot radius within which it would be counted. For a series of estimating points it is then possible to have the varying plots overlap.

Grosenbaugh states that it makes no difference if these plots overlap. As far as estimating average basal area per acre is concerned he is correct. However, the sampling error cannot be computed in the usual manner because the individual observations are not independent of each other. In other words, observations on overlapping plots are likely to be correlated, which results in a tendency to underestimate the standard deviation. Considering volume estimates from the variable plot method, overlapping of plots means that the trees counted more than once would be the larger ones. This would cause an over estimate of the average ratio of volume to basal area.

Grosenbaugh's statement that an edge effect bias may occur under conditions of marked differences in density if estimating points are kept at a certain distance from the edge of a stand seems valid.

It seems that the variable plot method of cruising still requires a considerable amount of investigation before all if its implications can be fully understood.

BERTRAM HUSCH
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Bitterlich's Method of Plotless Cruising

The building of good international relations has cost the United States much effort and there is no reason why foresters should not do their bit to create good feelings abroad. The origin of the plotless method of cruising is an example where the inventor is over-shadowed by his introducer. L. R. Grosenbaugh in 1952 introduced W. Bitterlich's angle method of estimating basal area to American foresters. Spurr's *Forest Inventory* published the same year gives a good account of the plotless method, the instrument designed to apply it, and some of the results of various European users. Both authors give full credit to Dr. Bitterlich, but Grosenbaugh works up the proof and details so thoroughly that readers may pass up the credit line and attribute the method to him. David Bruce in the JOURNAL of March, 1955, in introducing his wedge prism technique of separating the trees to be counted from those uncounted, refers to the method as "described by Grosenbaugh." A good taxonomist scanning the footnotes would recognize from the dates that Grosenbaugh followed Bitterlich, but dependence upon such keenness of observation, where a busy practitioner or a rushed re-

searcher hurries through an article, slights the originator of a rather unique relationship.

In Bruce's article, Bitterlich was at least noted and the relationship could be deduced. In the same JOURNAL, T. E. Avery in a note reporting on his application of the plotless technique in two loblolly-shortleaf pine stands refers specifically to "Grosenbaugh's 'plotless' or 'variable plot' system."

The world of ideas is full of transplants and by translation every culture is enriched by the accomplishments of another. However, ideas are usually earmarked by associating them with their authors. In order to preserve the credit and honor of having developed a new and distinctive idea in the field of timber estimating for Dr. Bitterlich of Austria, it is suggested that references to the technique use the expression *Bitterlich's plotless method*. Grosenbaugh's "plotless" is a bit of a misnomer, yet its implication so aptly expresses the lack of a fixed boundary characteristic of Bitterlich's method that it is borrowed from Grosenbaugh's paper to give the method a pithy phrasing. A more lengthy designation expressing the same idea was given by Wanner in 1948 when he described the method as "The sample plot without a sample plot."

In conclusion, a new technique for timber estimating has been introduced into our woods practices whose ultimate value is undetermined, but it is most accurately designated as *Bitterlich's plotless method* for purposes of future discussion and reporting.

T. W. DANIEL
Utah State Agricultural College

SECTION BOX SCORE 1956 MEMBERSHIP

Section	Applications received[1] Jan. 1956	Total 1955	Total 1956
Allegheny	0	63	0
Appalachian	3	38	3
Central Rocky Mountain	11	12	11
Central States	14	44	14
Columbia River	4	100	4
Gulf States	11	107	11
Inland Empire	7	10	7
Intermountain	1	18	1
Kentucky-Tennessee	1	9	1
New England	12	50	12
New York	25	33	25
Northern California	26	33	26
Northern Rocky Mountain	10	44	10
Ozark	1	47	1
Puget Sound	9	65	9
Southeastern	5	85	5
Southern California	0	3	0
Southwestern	0	12	0
Upper-Mississippi Valley	3	51	3
Washington	0	2	0
Wisconsin-Michigan	19	40	19
Totals	162	866	162

[1]Student, Junior, Affiliate, Associate (Initial)grades only.

SCHOOL BOX SCORE 1956 MEMBERSHIP

School	Student applications received Jan. 1956	Total 1955	Total 1956
Alabama Polytechnic Institute	0	18	0
University of California	25	17	25
Colorado A & M College	11	9	11
Duke University	1	3	1
University of Florida	0	17	0
University of Georgia	0	28	0
University of Idaho	7	4	7
Iowa State College	1	22	1
Louisiana Polytechnic Institute	0	13	0
Louisiana State University	8	43	8
University of Maine	0	12	0
University of Massachusetts	9	11	9
Michigan State University	6	14	6
University of Michigan	8	21	8
University of Minnesota	2	19	2
University of Missouri	0	26	0
Montana State University	10	25	10
State University of New York	25	23	25
North Carolina State College	0	22	0
Oregon State College	3	38	3
Pennsylvania State University	0	32	0
Purdue University	13	24	13
Utah State Agricultural College	0	12	0
University of Washington	5	28	5
West Virginia University	0	26	0
Yale University	0	16	0
Totals	134	523	134

William Buckhout Greeley (1879-1955)

Col. William B. Greeley, 76, one of America's foremost and most beloved professional foresters, died November 30, 1955, at his home in Suquamish, Wash.

Born in Oswego, N. Y., September 6, 1879, he moved to California in 1890, where he attended Leland Stanford University and the University of California, graduating from the latter institution in 1901 with the degree Bachelor of Science. During the period 1902-1904 he studied forestry at Yale University and was graduated with the M.F. degree.

Following Civil Service examination he entered the Bureau of Forestry (now the Forest Service) as forest assistant, July 1, 1904. Thus began his distinguished career in American forestry.

WILLIAM B. GREELEY

Promoted to forest inspector in 1905, he was named supervisor of the Sequoia National Forest a year later, and was advanced to district (now regional) forester of the Northern Rocky Mountain District (now the Northern Region) with headquarters at Missoula, Mont., in 1908. He went through the terrible forest fires of 1910 that took 85 lives in that region, among the worst conflagrations in America's history.

In 1911 he was transferred to the Washington, D. C., office of the Forest Service. Under Chief Forester Henry S. Graves, he was in charge of the Branch of Forest Management until the outbreak of World War I.

Commissioned in the Army, he sailed for France in August 1917 as a major assigned to the 10th Regiment (Forestry), Corps of Engineers. A year later he was appointed one of the assistant chiefs of the Division of Construction and Forestry. Subsequently he became chief of the Division's Forestry Section, and remained in charge until the Armistice. At that time this Section contained 21,000 troops, operated 95 sawmills, and produced more than two billion board feet of wood products daily.

For his war work he was awarded The Distinguished Service Medal (U.S.), the Legion of Honor (France), and the Distinguished Service Order (Great Britain). He was retired as a colonel of engineers (reserve).

He returned to the United States in July 1919 and rejoined the Forest Service. On Mr. Graves retirement to become dean of the Yale School of Forestry, Col. Greeley was named chief forester.

On becoming chief of the Forest Service, Col. Greeley found the organization still somewhat unsettled as a result of the recent war. Salary scales were low and there was a high turnover of personnel. Other problems pressed in on him. One was an attempt (later there would be others by Mr. Ickes) by the ineffable Secretary of the Interior of Teapot Dome notoriety to gain administrative control of grazing on the national forests and later of the national forests themselves. Attempts were made then, as they are still being made today, to legislate vested rights to stockmen in the range. These too were fought off.

During his administration was enacted the Clarke-McNary law of 1928, which established a fundamental forest policy for the United States by providing for federal-state cooperation in fire control, reforestation, and farm forestry extension. For that legislation Col. Greeley, the JOURNAL OF FORESTRY reported, "must be given overwhelmingly the main credit, and for it and the notable advance that has been made since its enactment his administration of the Forest Service will stand out as one of the great historic landmarks of progress in the national forestry movement."

During the 1920's public interest in forestry was manifesting itself in increased appropriations for forestry, especially protection, by the states; in increased enrollment in the forestry schools; in increased acquisition of publicly owned forests. In his annual report for 1925, Col. Greeley commented optimistically and prophetically:

"Forestry is at last making real headway in the United States in the shape of a gradual evolution in industrial practice and land management. To this evolution public leadership, current public opinion, and economic forces are now all contributing. National progress in forestry will from now on be measured, most of all, by the rate at which timber growing becomes part of every-day land usage. Of this outward spread of forestry there is marked evidence in current trends."

When he left the Forest Service, after eight years as chief, the net area of the national forests had been enlarged to some 159½ million acres.

On his retirement, the late Herbert A. Smith wrote "an appreciation" of Col. Greeley for the JOURNAL OF FORESTRY (April, 1928). The opening paragraph deserves quotation:

"The eight years that the Forest Service has been under the leadership of its present chief have been years of continuous progress. Externally, the influence of the service has been increased, its field of usefulness extended, and its prestige heightened. Internally it has gained greatly in efficiency of organization and in cleared definition of its task, while its morale and fine tradition of service to the public welfare have been fostered and maintained. Throughout the period the confidence felt in "Bill" by all those under him—confidence in his judgment and strength, in his ability to choose and firmly keep the right course while avoiding the reefs that might otherwise bring shipwreck, confidence in his fairness, open-mindedness, considerateness, and friendliness — has steadily intensified. That he has been a truly great leader with and under whom it has been good to serve, that we one and all profoundly regret his going, and that we shall always hold for him the heartiest respect, admiration, and warm affection is, I am sure, the common thought of the entire Forest Service today."

In May 1928 he became secretary-manager of the West Coast Lumbermen's Association, at Seattle. In addition to carrying on the customary duties of a trade association executive, he worked indefatigably for better forest management with emphasis on improved protection. When in 1946, at the age of 66, he retired from the West Coast Lumbermen's Association, it was to take still another important assignment.

At a dinner in Portland, Oregon, on January 25, 1946, "honoring W. B. Greeley, distinguished American forester," he was appointed to head the nationwide "trees for tomorrow" program, an all-American forest industry movement to stimulate tree growing on private land. This activity was in addition to his appointment as chairman of the board of trustees of American Forest Products Industries, Inc.

An early advocate of tree farming, Col. Greeley as chairman of the board of A.F.P.I., the national sponsoring tree farm organization, led the movement so vigorously that today 7,300 registered tree farms total 37 million acres.

It was in 1946 also that he was awarded one of the highest honors in forestry, the Sir William Schlich Memorial Medal. Presented at the annual meeting of the Society of American Foresters in Salt Lake City on September 12, the medal is named for the late Sir William Schlich, an early professional forester who exerted great influence on forestry practice and education throughout the English speaking world. Only three previous awards of the medal had been made: to President F. D. Roosevelt, to Gifford Pinchot, and to Henry S. Graves.

Honorary degrees from two great universities were conferred on him in June 1927: the degree Doctor of Laws by California and Master of Arts by Yale.

Of his many contributions and activities in the Society of American Foresters, space permits mention of only a few. He was vice president in 1912, and president in 1915. He was a member of the Council in 1917, 1920, 1921, and during 1944-1949. He was elected a Fellow in 1918.

In addition, he was a director and president of the American Forestry Association, and a frequent contributor to *American Forests*. He was the author of *Forests and Men*, published by Doubleday in 1951, and *Forest Policy*, published by McGraw-Hill Book Company in 1953 as one of its American Forestry Series.

Reviews

Range Management

By Laurence A. Stoddart and Arthur D. Smith. 433 pp. Illus. McGraw-Hill Book Company, New York 36, N. Y. 1955. $7.

The second edition of this important textbook and reference in range management has been greatly improved by reorganization, condensation, and editorial rewrite. Many tabular examples are improved and the statistical tables are brought up to date. The bibliographies include 588 references from the literature, many as recent as 1954. Indexing of the new edition is good.

The introductory chapter "Development of Range Management in the United States" gives an essential resume of land policy.

The chapters on "Physical Features of the Western Range" and "Grazing Regions of the United States" have remained about as they were in the first edition. A section has been added to the latter chapter on the southeastern grazing areas, reflecting the development of grazing management in that region.

Plant physiology and plant ecology in relation to grazing are presented in two separate chapters in the new edition.

The forage utilization concept and ecological methods useful in range studies constitute the core of the chapter on "Technical Methods." The concept of range condition is treated in proportion to present day emphasis and presented with range inventory.

A discussion of the importance of range site differences within types provides excellent advice to those who would blindly attempt interpretation of range condition data without understanding the ecology of the range. It, however, leaves one frustrated by omission of criteria by which these important site differences might be judged. The old density inventory methods are presented in three and one-half pages whereas the weight inventory methods are disposed of in a section of eight lines. The reviewer believes that the student and the grazing manager need an evaluation of the yield methods which are increasing in favor among many technicians. Grazing managers are confronted with the problem of estimating usable feed as a step in management planning and as an adjunct to condition and trend analysis. The book does not fill the need in this area.

The range condition classification methods developed by both the Soil Conservation Service and U. S. Forest Service are presented. In discussing the "Forest Service Method of Condition Analysis," the score card "step" is overemphasized and the important loop sample and photographic "steps" are not mentioned. In spite of these deficiencies, the authors do present a good base from which to introduce the subject of range methodology.

The chapters on wildlife relations and on timber, water, and soil conservation in relation to grazing follow the discussion of range methodology. This arrangement is good because it provides a multiple land use perspective prior to considering the details of range management.

An excellent summary table in the poisonous plants chapter gives the range and habitat, seasonal toxicity, animals affected, poison principle, and conditions of poisoning for 38 important plants.

The chapter on animal nutrition displays Utah's leadership in range nutrition. It is especially valuable where range management is studied without background coursework in animal nutrition.

The basic ideas from four chapters of the first edition are effectively reorganized and presented in two chapters, "Livestock Management and Range Operation Problems" and "Securing Proper Range Use."

The old chapter on "Effects of Burning" has been expanded to include mechanical, chemical, and biological control of undesirable range plants under the title, "Eradicating Undesirable Range Plants." The chapter on "Artificial Seeding" presents both general and detailed information and now includes a brief discussion of the Southeast. The original chapter on physical range improvements has been retitled "Range Improvement" and sections on "Improvements to Conserve Water" and "Range Fertilization" have been added. These three chapters form an excellent reference base for a course in range improvement.

The revision has greatly strengthened a framework which will give students of range management a good start on the road to becoming better resource managers. In spite of the critical tone of this review, these authors have regained a position as writers of the leading textbook in range management. Even though you have the first edition on your bookshelves you will enjoy and profit from this new treatment.

CHARLES E. POULTON
Oregon State College

Regeneration Problems and Their Silvicultural Significance in the Coastal Forests of British Columbia

By E. H. Garman. 67 pp. Illus. British Columbia Forest Service, Department of Lands and Forests, Victoria, B. C., Canada. 1955. 25 cents.

This is an account of investigations in the silvics of the Douglas-fir coastal region of British Columbia. Because adequate restocking within a reasonable time often failed to follow mechanized logging, the British Columbia Forest Service, through its Research Division, set out to acquire the basic knowledge of Douglas-fir silviculture and then apply it in the practice of forest management. A vast amount of data had to be analyzed

and digested, including that from the northwestern states.

The author shows that lack of reproduction is largely a matter of cutting practice, that is, inadequate consideration of seed-supply. He anticipates that eventually the individual settings of the patch-logging method will be reduced to long clearcut strips about 300 feet wide to facilitate rapid natural regeneration.

In careful detail the author examines the factors controlling natural regeneration and their application to silvicultural practice. This, to the reviewer is the nub of the bulletin. As the author says, "A knowledge of these factors and how they interact is all-important to the forester."

A comprehensive list of pertinent literature cited completes this excellent bulletin.

The author and his colleagues are to be highly commended for such a factual approach to a difficult problem of management. A similar approach to the equally difficult problem of the spruce-balsam forest of the interior of the province would be most welcome and timely.

A. B. RECKNAGEL
Ithaca, New York

Seeing America's Wildlife in Our National Refuges

By Devereux Butcher. 348 pp. Illus. Published under the auspices of Defenders of Furbearers. For sale by Devin-Adair Company, New York 10, N. Y. 1955. $2.50, paper; $5, cloth bound.

This is the third book written by the author on kindred subjects, the other two having to do with national parks and monuments in the United States and Canada. *Seeing America's Wildlife* describes 41 selected national wildlife refuges as to the wildlife and natural features to be found thereon, together with helpful information on how to reach the refuge and headquarters. The dedication of the book "to everyone who enjoys wildlife solely for the pleasure of seeing it" pretty well sums up the author's philosophy to be found within the pages.

The introduction and first 24 pages are largely concerned with a tirade against the hunter and sportsman. Since as the title of the book indicates, we are seeing the refuges through the author's eyes I cannot object to his comments. He does, however, fail to mention the basic concept of the national wildlife refuge system, or to give any credit to the sportsman whose money is largely responsible for financing the refuge program, through the purchase of duck stamps.

The 350 halftones of birds, mammals, and scenes, many by the author, are excellent as to photographic perfection. The subject matter as being representative of certain refuges could have been better selected. For instance, waterfowl concentrations at Savannah Refuge far surpass the few quail that may be found there; mink is almost nonexistant at Okefenokee. The photograph on page 157 is not the famous Okefenokee "Dinner Pond" timber.

The author's choice of the 41 national wildlife refuges which are described is very good, and represents a cross-section of the system. Only one refuge is lacking in the list starting on page 315, and that is Presquile National Wildlife Refuge in Virginia.

The "Conservation in Action" series of the U. S. Fish and Wildlife Service describing many of the national wildlife refuges and the companion pamphlet, Refuge Leaflet No. 1, "Visiting National Wildlife Refuges," are lacking from the list for further reading to be found on page 325.

As a guide manual for nature lovers who are most welcome on national wildlife refuges, Mr. Butcher's book will find ready acceptance.

HOWARD A. MILLER
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Publications of Interest

The annual *Directory of Organizations and Officials Concerned with the Protection of Wildlife and Other Natural Resources* has been issued by the National Wildlife Federation, 232 Carroll St., Washington 12, D. C. Price: 25c per copy.

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Directory of Wheel and Track-Type Tractors produced throughout the world is a 1955 publication of F.A.O., Rome, Italy. Issued in English, French, and Spanish. Specifications in metric and English units. Divided into three sections giving: (1) Addresses of manufacturers of wheel and crawler tractors, (2) list of wheel tractors by categories and specifications of models, and (3) a similarly detailed listing for crawler tractors.

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Relationship of Wood Specific Gravity in Loblolly Pine to Growth and Environmental Factors by B. J. Zobel and R. R. Rhodes is Technical Report No. 11 of the Texas Forest Service, College Station. Dealing with *Pinus taeda* in East Texas, the study was directed toward a determination of the extent to which wood specific gravity is influenced by selected environmental, morphological, and growth factors.

• • •

What You Should Know About Lumber explains in simple, basic terms how wood is classified by trees, by manufacture, by use, by size, and by grades. Nineteen softwood and 12 main hardwood species are briefly described by characteristics. Tips to the purchaser of lumber are given. The 24-page booklet is prepared especially for do-it-yourself enthusiasts, home owners, and the general lumber buying public. Available at 10c per single copy, 7c per copy for two or more, from the National Lumber Manufacturers Assn., 1319 18th St., N.W., Washington 6, D. C.

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Digest of Laws Relating to State Parks, by Flavel Shurtleff, Planning and Zoning consultant, is a reference source for those interested and concerned with state parks. It is a revision of the 1936 publication by the same name issued by the National Park Service and is for sale at $3.00 per copy by the National Conference on State Parks, 901 Union Trust Bldg., Washington 5, D. C. Alaska, Hawaii, and Puerto Rico laws are listed as well as those of each state.

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Society Affairs

Officers and Council
1956-1957

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The President's Column

December 3, 1955

To the men and women of the Society of American Foresters:

Today I learned that the Society had placed upon me a great honor and a great responsibility. I look into the next two years with some misgivings about my own qualifications but with full confidence in the men and women of the Society, its Council, and staff.

While looking ahead I also glance back over the trail we have covered during my thirty years of membership. I have vivid memories of my first Society meeting in San Francisco, December 16-17, 1927. Major R. Y. Stuart was president. In 1939 at the San Francisco meeting I gave my first paper, "Fire and Forest Resources in California." Dr. Clarence F. Korstian was president. In 1947 I attended my first meeting as a member of the Council in Minneapolis, Shirley Allen was president and Clyde Martin had just been elected. The last two years, 1954-1955, I have had the privilege of serving as vice president to E. L. Demmon.

I recount this, not as a biographical sketch, but I hope as a challege to the hundreds of young foresters in our ranks. For each time we participate in a Chapter, Section, Division, or Society activity we are doing something for the profession and we are building ourselves. Each time we participate we give the best we have and we receive in like ratio—both the Society and the profession take on new meaning and grow a little.

Back in the mid-twenties we had only 1,300 members, today we have nearly 11,000. At that time a forester was primarily a custodian and a technician. Today his responsibilities reach into the realms of management, production, and top level policy making whether it be in public or private forestry.

I invite you to review the progress made in forestry during the past three decades. Take any activity—the one in which you yourself are primarily interested, whether it be protection, management, production, economics, regeneration, research, education, utilization, range, watershed, recreation, or a dozen others—and measure the progress made. This progress was made because of dedicated men and women, because of changing economic conditions, and because of new pressures and demands placed upon our wildland resources.

Our predecessors have done a wonderful job—but what of the future? Where will we be as a profession thirty years from now? Who will be the Bill Greeleys of that period?

Can we as individual foresters and as a profession measure up to the challenges that lie ahead? Every man must answer that question for himself through his contribution to the total task. I for one have an unbounded faith in our profession and in our Society to measure up to the job.

So that the Society may contribute its share of the task I pledge to you the best efforts of your new officers, Council, and staff. I know you will give us your help at every turn of the trail and at every level of activity.

Let us continue to expand our Chapters so more may actively participate. Section meetings help us keep up to date in what the other foresters are doing. JOURNAL contributions add to our professional knowledge. We must all work on strengthening our ranks with new members, don't leave it entirely up to the membership committees.

I believe it is good to occasionally refresh our memories of the Society's three objectives:

1. To represent, advance, and protect the interests and standards of the profession of forestry.

2. To provide a medium for exchange of professional thought.

3. To promote the science, practice, and standards of forestry in America.

Our professional success will depend on our willingness and ability to keep working toward those objectives.

DeWitt Nelson

Report of Officers, Staff, Committees, Council Meeting, and Divisions

Fifty-fifth Annual Meeting, Society of American Foresters, Portland, Ore., October 16-21, 1955

President's Report

E. L. Demmon

This is my last annual report as your president. During my two-year term our Society has made steady growth in membership, which now exceeds 10,000. Also, I am pleased to say that we have continued to operate within our means. I commend your Council and the Washington office staff for the efficient and useful way they have been serving you. With the continued activities of the Chapters, Sections, and Divisions I am optimistic for the Society's future.

It is a pleasure for me to be with you here in Portland. Some of the earliest days of my forestry career were spent in Oregon, assisting in the Douglas-fir plantings on Mt. Hebo; working with a private lumber company in the Sumpter Valley in eastern Oregon; and as a U.S. Forest Service field assistant surveying in the Wallowa Mountains. I have very fond remembrances from my Oregon experiences, which proved most interesting and instructive for a young forester.

Since I took office in January 1954 it has been my pleasant duty to attend a number of Chapter and Section meetings in various parts of the country. During this period I have sat in on 22 such meetings, representing 13 different Sections; and I plan to attend others before the end of the current year. Every one of these gatherings has been a credit to our Society—the technical programs and discussions have been constructive and the attendance excellent. These local activities are vital to the future strength and growth of our profession. I commend the local officers for the fine work they are doing in this respect, but urge them to bring more of the younger men into these Society activities.

I have had the opportunity to visit our Washington office rather frequently and confer with the staff there on Society business. I am pleased to report that your Washington office is working diligently for you as reflected in the services they are providing and in the favorable status of our finances. Of course, more services could be given our members if additional funds were available. However, it is my opinion that such additional funds should not come through raising dues, but rather from outside sources for special projects through foundations or otherwise. We have appreciated the extra funds donated by members periodically for the overall benefit of the Society.

Two of the busiest men at the meeting. Martin L. Syverson of the Arrangements Committee, and J. Herbert Stone, general chairman.

During my term of office I have spent considerable time and effort in the never-ending campaign for new members. There are still far too many qualified men in the forestry profession who have either dropped their membership or who have never become affiliated with our Society. During 1955 many former members have renewed their membership under the temporary provision of cancelling out past dues. This provision, however, will be discontinued at the end of the current year. I have been particularly pleased with the growth of our student membership. This has proved to be a real asset in getting men into the profession at an early age, and has been an encouragement to keep them in.

In addition to the high-type JOURNAL OF FORESTRY issued regularly, 1955 has seen several new publications come from the efforts of Society members. First, we got out the *Proceedings* of the 1954 annual meeting in Milwaukee, and this worked out so satisfactorily that I recommend the practice be continued in future years. A new quarterly journal, *Forest Science*, made its first appearance last March and has been well received, with more than 1,200 subscribers enlisted to date. Two new books have appeared as Society publications: *Forestry and Related Research in North America* (in June) and the *Forestry Handbook* (in September). These books represent the work of many Society members and are significant contributions to forestry literature in these fields. As a matter of fact, the *Handbook* is an innovation in this respect. The issuance of the proposed Membership Directory has been postponed until next year in order to stay within our budget.

During this year I have continued to write a column for each issue of the JOURNAL. This has given me an opportunity to bring various matters of current professional interest before our members. These columns have evidently been read as they have elicited a number of comments, both pro and con, concerning ways in which our Society can be improved, so I consider that this contribution on my part has been worthwhile.

In closing let me say that I have enjoyed serving as your president during these last two years. Our Society has an important role to keep high the standards of our profession and to maintain the progress of forestry in America. I believe we now command the confidence and esteem of the public.

We older men should not hesitate to give younger members more of the responsibilities of keeping the organization functioning. It is on their shoulders that the future of forestry and the profession will rest.

And now let me thank the members for their loyal support and confidence. I know you will continue to give the same to your next group of officers. It has been a rewarding two years for me. Thank you for letting me serve you.

The annual Society Affairs session was held in the Grand Ballroom of the Multnomah Hotel in Portland, Oregon, on the afternoon of October 17. President E. L. Demmon presided.

The Council met October 16, preceding the opening of the Annual Meeting.

The reports which follow indicate the scope of the activities of the Society in behalf of the profession, and the members are urged to read them.

Report of Executive Secretary

Henry Clepper

Mere numbers alone is no certain indication of an organization's value to the public welfare. We can nevertheless take some pride in knowing that we are the largest professional forestry society in the world.

Membership by grades, as of September 30, 1955 was as follows:

Student Members	542
Junior Members	4,745
Members	4,173
Fellows	68
Affiliate Members	631
Associate Members	242
Corresponding Members	68
Honorary Members	19
Total	10,488

So far this year our executive office has processed 1,890 applications, advancements, and reinstatements to membership.

Finances

Our income for the fiscal year 1955 is estimated at about $130,000 from all sources. Our most important single source of income is from membership dues. It will amount to about $90,000 this year.

Our expenses for the year will by no means exceed our income. In short, we are still operating in the black.

The grant of $30,000 from the Rockefeller Foundation, to conduct the forestry research project, was all expended except for about $500 which was returned to the donor.

A complete statement of income and expense for 1955, and the budget for 1956 will be published in a subsequent issue of the JOURNAL OF FORESTRY.

Special Projects

President Demmon has mentioned the completion of two of our most important projects of all time. The *Forestry Handbook* represents the contributions of more than 200 members who gave assistance at various stages in its preparation. As a cooperative undertaking it probably was the largest—unquestionably, the most complex—ever started by our Society.

Likewise the book *Forestry and Related Research in North America* represents the cooperative efforts of literally dozens of individuals who contributed information and suggestions.

The success that the committees in charge of these two projects had in their development leads me to believe that the Society can launch even bigger projects in the future.

THE CHAIRMEN of the two host Sections: Royce O. Cornelius, Puget Sound Section; and Dan D. Robinson, Columbia River Section.

Two projects have recently been suggested that offer possibilities for Society action. The first is an atlas of American forestry patterned after the government's old atlas of American agriculture. In short, a collection of maps and supporting data in tabular form that will present in a single large volume the basic up-to-date information on the forest resources of America.

One objection to the Society undertaking such an ambitious project is that it could be done better by the Forest Service as a publication of the U.S. Department of Agriculture. However, the suggestion has intriguing possibilities and should be explored further.

The second proposal is an encyclopedia of American forestry, patterned after Bailey's monumental *Standard Cyclopedia of Horticulture*. As against the need for such a work, and the appropriateness of the Society's tackling such a tremendous job, must be considered the probable selling price. *Bailey's Cyclopedia* is in three volumes and is priced at $40 the set. Considering present printing costs, we should keep in mind that a similar work for forestry might well involve a publication of similar length, priced no lower than the other, and perhaps even as much as $50. Do we have enough possible purchasers of an encyclopedia of American forestry to justify the Society going ahead?

ANNUAL MEETING
REGISTRATION CARDS

TABULATION BY EMPLOYMENT

Federal	451
State	94
Educational	100
Private	305
Students	94
Others	103
	1,147
Ladies	270
	1,417

New Schools of Forestry

During 1955 two universities consulted the Society about offering professional curriculums in forestry leading to a degree. As with similar inquiries in the past, the Society provides such institutions with pertinent data on costs and the bases of accreditation. In one case, it is expected that the university will not start a professional forestry curriculum because of the cost involved and the additional faculty required. The outcome at the other university is uncertain.

Let me again remind our members of the official policy of the Society, as stated by the Council. Because of the adequacy of existing schools of forestry to supply the demand for professional foresters, the Council recommends against the establishment of new schools or departments for professional training unless adequately staffed, housed, and financed at the start. However, the Society welcomes the introduction of nonprofessional courses in forestry when offered for general education or as part of the training of students in agriculture.

There are now 26 institutions accredited for forestry instruction; 11 additional institutions offer professional and technical curriculums in forestry, but do not meet the requirements for accreditation. A total of 27 institutions offer introductory, preforestry, specialized, and ranger school courses. In summary, forestry is being taught in 64 institutions of education beyond high school level.

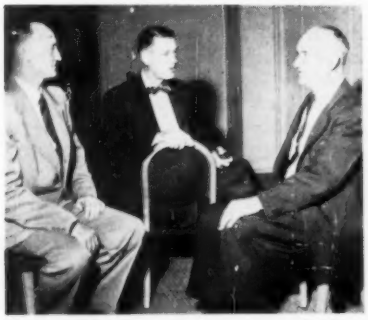
New Projects for 1956

As to what is ahead for 1956, I am glad to report on three undertakings that have been authorized by the Council.

First, is the publication of the long awaited directory of members, the last issue of which was published in 1950. We hope to have it available during the spring.

Second is a new edition of *Forestry Terminology*, first published in 1944 and issued in a revised edition in 1950. The new edition will include terms not previously represented, particularly in genetics, photogrammetry, and utilization.

Third is the starting of another research project, a study of forestry



P. A. BRIEGLEB, New Orleans, La.; C. Huxley Coulter, Tallahassee, Fla.; and Glen R. Durrell, Stillwater, Okla.

education. This is proposed as a sort of companion study to the survey of forestry and related research completed in 1955.

In Appreciation

By resignation for compelling family reasons, the Society has lost one of its most valued employees. Mrs. Betty Welsh joined the Society's executive office staff in 1936, then a girl recently out of high school. For eighteen years she faithfully and efficiently performed the duties of secretary. Mrs. Welsh had memorized the names, addresses, and professional affiliations of more American foresters than any other person, living or dead, had ever done. Many of you know her well, and will be as sorry as we are that she is no longer with us.

Report of the Editor

Arthur B. Meyer

When an editor hunches over his desk with pen in hand the first word is likely to be "we." Webster explains this as an effort to keep an impersonal character or to avoid the egotistical sound of a repeated "I." Quite often, however, the editor means we, for most of his work complements or supplements the work of other people. This is particularly true in the Society's case. The Constitution establishes functions, the Council directs policies and the framework of procedures. The editorial board largely guides the contents of the JOURNAL, and other special publications originate with special committees. Business matters are handled separately from editorial functions. And to top this all off, the people who write what ends up in print are the editor's primary source of joy and sorrow.

Should the enumeration of such circumstances ever make it appear that an editor sought to hide his responsibilities in the safety of a crowd, it is to be remembered that tradition requires that his name and address appear in a conspicuous place for the information and convenience of readers.

President Demmon and Henry Clepper have both mentioned the subject of Society publications, and the way in which they fit into the program of the Society should be apparent. Our publications are not an end unto themselves, but a means of furthering the science and practice of forestry.

I wish to report here as briefly as I can on several of our various publications, excluding *Forest Science* which will be covered by editor Steve Spurr.

The mention of three of our least recent items may make it apparent that the Society does not publish material of ephemeral importance.

Forestry Terminology first appeared in 1944. It was revised in 1950. Copies of that edition are now exhausted and a third revision is to be undertaken.

In the spring of 1954 the revised bulletin "Forest Cover Types of North America" was published. The original printing of 2,000 copies has been exhausted and a second press run made.

SULO V. SIHVONEN, Crossett, ARK.; George A. Garratt, New Haven, Conn.; and H. Guyton DeLoach, Atlanta, Ga.

Quite some time ago we had a bulletin on forestry as a vocation. The changing aspects of employment in forestry eventually made a revision desirable. This has been delayed by work on other publications but it should be forthcoming before spring. We have continuous requests for such a bulletin.

ANNUAL MEETING SOCIETY OF AMERICAN FORESTERS

PORTLAND, OREGON — OCTOBER 16-19, 1955

REGISTRATION

TABULATION BY STATES

Alabama	4	New Hampshire	2
Arizona	6	New Mexico	2
Arkansas	7	New York	7
California	78	North Carolina	6
Colorado	11	Ohio	3
Connecticut	5	Oklahoma	1
Dist. of Columbia	15	Oregon	541
Florida	5	Pennsylvania	8
Georgia	7	Rhode Island	1
Idaho	35	South Carolina	1
Illinois	6	South Dakota	3
Indiana	2	Tennessee	2
Iowa	2	Texas	3
Louisiana	9	Utah	11
Maine	3	Virginia	6
Maryland	7	Washington	249
Massachusetts	2	West Virginia	2
Michigan	13	Wisconsin	14
Minnesota	10	Canada	14
Mississippi	4	Alaska	14
Missouri	5	Foreign	5
Montana	16		

Total	1,147
Ladies	270
	1,417

A few months ago *Forestry and Related Research in North America* came out. It is selling quite well and will doubtless continue to be sought for a number of years as the authoritative reference that it is.

The *Forestry Handbook*, which just appeared, was published by a commercial concern, The Ronald Press—not by us. In this instance the Society is in the same position as an individual author who writes a book and sells it to a publishing firm. The book becomes the publisher's property, the author being paid a royalty on sales. We hope that sales will eventually reimburse the Society for most or all of the investment, in excess of $9,000, made in this book during its several years of preparation. The *Handbook* has been too recently issued to have sales figures available, although Ronald Press reports that original orders exceeded their expectations. It is also too early to comment more than superficially upon how the book is being received by those whom it was meant to serve. As a first in its field the *Handbook* will undoubtedly be given both praise and criticism, as is right and proper, but every one of the many people who labored over it has a right to be proud of a big undertaking, one that we hope will live for a long time. Those of you who have seen the book realize that it is made up so that individual sections can be revised without upsetting the whole. It is time now to start planning a revision in 5 or more years that will keep the book current and that will permit inclusions or omissions found desirable through usage.

Incidentally, though the section subject-matter chairmen, our editorial staff, and the well trained specialists of a large publishing firm worked hard to avoid such occurrences, there will inevitably be some errors in this first printing, typographical or factual. We pray they will be few and minor, but the Society solicits the aid of users of the *Handbook* in the discovery of any errors that do exist so that they may be corrected in subsequent printings.

Last year, for the first time since 1948, we published a proceedings of our annual meeting. We do the same this year. I would like to discuss the matter at greater length but will restrict myself to some general and undocumented observations. Proceedings are an excellent undertaking in several ways. The only thing to their discredit is that they cost money. Individual copies could be sold at a greatly reduced figure if even a minimum number of foresters who can't attend an annual meeting bought a copy. Last year, for instance, if we had printed and sold even 1,500 copies instead of the 1,000 we did print, the cost would have been $2.70 per copy instead of $3.90. It's the first copy that costs money in printing. If our 9,000 foresters who are not here this year will forgive a little sales talk I would like to suggest that they think of the proceedings of the 1955 meeting as a book of quite respectable size that deals not only with the subject of "Converting the Old Growth Forests" of the Pacific Northwest, but also with the most recent developments in American forestry. The book will be written by leading authorities in a large number of fields in the profession and will make interesting and valuable reading for any forester who likes to keep up with current progress.

Last year's proceedings discussed "Our Changing Forests" with emphasis on the Lake States and Central regions. If anyone is interested we still have some copies available.

This subject leads rather naturally into that of the JOURNAL OF FORESTRY, which most of you probably assume receives all of the working effort of the editor whom you employ. You see it does not, though I wish it did.

The JOURNAL lends itself to lengthy discussion, but you receive a copy each month and I will not burden you with endless details. The most important development I have to report is that we no longer have a large, unwieldy, and life-sapping backlog of articles. A year ago, as for some time before that, we had the equivalent of a year's supply of material waiting publication. We now have one third that much. We can now publish a more current, and we therefore hope more vital and useful magazine.

This fortunate development came about from several things. The publication of proceedings clears the JOURNAL of a four- or five-months supply of articles each year. The appearance of *Forest Science* drained off a portion of our backlog and naturally had an effect upon the volume of our submissions. The way is clear now for selective publication between the two magazines. The JOURNAL's editorial board during the past year has rigidly screened articles for acceptance. We have reduced manuscripts in length wherever possible and have devoted more pages in the JOURNAL to articles.

It is a real pleasure for me to announce that the JOURNAL is again in a position to welcome the submission of articles and notes in all major fields and to indicate that they will appear in print without undue delay. It is especially pleasing to be able to report this here on the Pacific Coast because our particular needs include articles on industrial and private forestry practices, on forest management, and developments in utilization. Furthermore, we need to have a larger proportion of our articles written by western foresters and on western forestry. We solicit your contributions and will give them prompt attention.

Two other items about the JOURNAL. For the first time we are planning next year's convention number so that it will be an annual meeting issue both in editorial content *and* advertising. Articles and notes will be especially written and will deal with forestry in the region where the meeting is held—the South. Secondly, a committee from the editorial board has just completed, and the Council has approved, a formalized statement of policy on publications. Its purpose is to guide the editorial board in the selection of material and to assist contributors. It represents, not new policies, but a crystalization of those that have been in effect. This policy statement appears elsewhere in this issue.

May I, in final connection with the JOURNAL, again take opportunity to express the thanks of all of us to the associate editors. Without their competent, time consuming, and unpaid efforts the JOURNAL OF FORESTRY could not hold the position it does in forestry literature.

There is one additional matter on which I wish to report that does not fall strictly into the field of Society publications. At the Fourth World Forestry Conference in India in December 1954, a recommendation was passed urging individual countries to establish committees on forestry terminology with the ultimate purpose of developing an international, multilingual dictionary of forestry terms and definitions. Previous work along these lines had been in progress by a joint F.A.O.-I.U.F.R.O. committee. (I.U.F.R.O. is the International Union of Forest Research Organizations.) This committee had established basic procedures which involved the compilation of forestry terms in the English language for translation into other languages. As I understand it, modern forestry terminologies do not exist except for those of the British Commonwealth and the S.A.F. As a first step toward compiling a basic set of terms it was necessary to iron out any *need-*

less difference between British and U.S. terms and definitions in so far as possible. From there on the task was to compile terms peculiar to British and U.S. usage and state them in such a way that they would be capable of translation into other languages with the least confusion.

This spring the Society was requested to cooperate with a British representative in exploratory work in this obivously very large undertaking. Expenses for the travel of a representative to England were made available from international funds and President Demmon designated me to represent the Society. During June I spent three weeks in Oxford, England, working with Mr. Ford Robertson of the Commonwealth Forestry Bureau, publishers of *Forestry Abstracts*.

We attacked the task by a systematic comparison of individual terms occurring in our *Forestry Terminology* and the British Commonwealth *Forest Terminology, Part I*, and sections of Part II which were then in manuscript form. Their Part II deals with terms in utilization. The British have adopted or slightly modified some 250 definitions from our terminology. These were studied first to see that modification did not change their original meaning, or to see if modification had improved them. This was a tedious but sometimes amusing task, with numerous differences in word usage showing up. We succeeded, however, in selecting a set of definitions of these mutually used terms that we felt was acceptable to both British and U.S. meanings. I would make it clear that any changes in wording from either terminology that Mr. Robertson and I agreed upon were in the first place minor and in the second place not directed at changing American or British terms. The task was simply to arrive at a term and definition that we both understood and that would lend itself to translation.

Following this, we undertook a systematic listing of terms occurring in one country's terminology but not in the other, with a view to selecting those that were unique to either country and those that might, with study by the proper subject matter authorities, be found capable of combination into one mutual definition. This latter task, as is apparent, includes hundreds of terms and is a long time project. We are attempting to chew away at it by correspondence.

In the meantime the international terminology committee is listing individual terms that are mutually agreed upon in British and U.S. terminology for distribution on cards to the terminology committees of individual countries. Terms that are used only by the British or only by the U.S. will be presented as such, but a continuing effort will be made to prevent the presentation of two terms that are similar in meaning but not identical. The object is simply to avoid needless conflicts that would only confuse foreign foresters.

A considerable further effort will be required by us in this British-U.S. undertaking including integration with Canadian terminology. I am not sure how the work will be handled for we have actually only taken care of the easy part so far and what remains to be done will require much work and much consultation with authorities.

Council Committee On Membership

The president and executive secretary have given you some statistics on membership. We wish to give you an additional fact which we believe is important and significant. It has to do with membership losses. On the basis of incomplete information, it looks like our loss of old members will be the smallest we have ever had in a single year—approximately 5 percent. Those of us who have tried to analyze the reasons for loss of members have felt that fewer members will drop out if they find real value in the Society. We believe improved service to the members through the Sections and Chapters by providing better programs is the answer. It looks like we are making progress in accomplishing this. We are sure that each of you have had a part in making this Society a better and more valuable one and we hope these activities will reduce the loss of members.

Because the machinery of processing membership applications seems to be operating rather smoothly, this report will be limited to two matters where improvements are needed. In last year's report at Milwaukee, we called attention to the problem of evaluating the qualifications of applicants who apply for advancement from the affiliate to the junior member grade. You should keep in mind that most of the men who have come into the affiliate grade on the basis of practical experience can never qualify for the junior grade. Membership Committees should be especially careful in screening these applicants. If such an individual is considered qualified for the junior grade, his sponsors should be sure to give complete and specific information about the applicant. The applicant's experience must be diversified and of a technical character if he is to qualify for the junior grade.

Apparently many members do not realize that affiliate members who qualified for this grade because they graduated from nonaccredited schools cannot advance automatically to the junior grade. If they could advance automatically, the basic idea of accrediting would be undermined. This probably accounts for the fact that some sponsors fail to give adequate information about these applicants in their sponsors' statements.

The student membership grade which was authorized in 1950 continues to be an increasingly important factor in building up Society membership. At the annual meeting in 1953, the executive secretary reported that about 30 percent of eligible students in the schools enter the Society each year. During the school year 1954-55, there were 760 student members—the highest percentage ever achieved. It is estimated that this constitutes approximately 70 percent of the eligible students. The accredited schools are doing a good job in acquainting their juniors and seniors with the advantages of membership in a professional organization.

We should look forward to the day when we will be bringing all eligible students into the Society as Student Members. To achieve that goal, our Committee solicits the aid of each faculty member of accredited schools as a Society salesman.

C. H. COULTER
E. F. HEACOX
R. H. WESTVELD, *Chairman*

Report on Forest Science

In 1955, *Forest Science* appeared as a unique venture in forestry journalism. Designed to provide a medium for scientific articles of high caliber, it became a reality under the impetus of: (1) a grant of two thousand dollars from the Horace H. Rackham fund of the University of Michigan; (2) the decision of the Council of the Society of American Foresters to provide subscription, circulation and other services; and (3) the expressed willingness of the U.S. Forest Service to provide manuscripts and editorial assistance and to purchase reprints in quantity. The initial staff of the journal includes a three-man editorial board

with Prof. Stephen H. Spurr of the University of Michigan as editor and Dr. V. L. Harper of the U.S. Forest Service and Henry Clepper of the Society of American Foresters as associate editors. Miss L. Audrey Warren of the Society is business manager.

Plans formulated in the fall of 1954 called for a quarterly journal of 64 pages with an initial circulation of four to six hundred. Initial reception of the proposal, however, both in manuscripts received and in numbers of subscriptions, greatly exceeded expectations. The first issue was expanded to 80 pages and was mailed to approximately 1,000 prepublication subscribers.

At the present time, with three of the first year's issues published, the financial success of the venture is assured for its first year of existence. Thirty-five articles covering 256 pages of three issues have been distributed to more than 1,200 subscribers. Subscription revenue augmented by profits on large reprint sales (sales of the first 100 reprints are below cost) will leave the journal with a balance of approximately two thousand dollars for the present year. A grant of five thousand dollars from the National Science Foundation may be drawn upon in the event that deficits arise in the next two years. By the end of that period, the journal should be stabilized as far as flow of manuscripts and the number of subscriptions are concerned.

Forest Science appears to be serving a real need, judging from the manuscript submissions and from reader interest. For the first issue, several articles were borrowed from the JOURNAL OF FORESTRY in order to provide a better coverage of subject-matter field for the new journal and to reduce the backlog for the older journal. Since that time, a number of manuscripts have been referred to *Forest Science* by the editor of the JOURNAL, while several manuscripts submitted to *Forest Science* have in turn been turned over to the JOURNAL. The two periodicals clearly seem to complement each other rather than to compete, and a free interchange of manuscripts between them seems destined to improve the quality of both.

Forest Science is frankly designed to be a prestige journal. Its format was designed by George Lenox of the University of Michigan Press to this end. The high-quality paper, the art work on the cover, and the separate treatment of each article are designed to indicate that this is a journal of which both the contributors and the subscribers may be proud. The suggestions of all as to the value of these representations are welcomed.

As of October 1, the editor has handled 73 manuscripts of which 35 have been published, 13 have been rejected and the remaining 25 are in various advanced stages of preparation. Emphasis to date has been placed upon the prompt publication of shorter articles picked to indicate the subject-matter coverage of the new publication. A major purpose of *Forest Science,* however, was to provide for publication of longer scientific articles. The first such article will appear in the December issue, and it is hoped to include at least one such article in each subsequent number.

How often should *Forest Science* be published, and how large should the issues be? These decisions must take into account the supply of suitable manuscripts and the income from subscriptions and reprint sales. As of 1955, the quarterly appearance of the journal in issues of 80 to 96 pages appears to satisfy the current need. Once articles are received in acceptable condition, they are being published in one of the next two issues. With the inclusion of longer articles, it is anticipated that the individual issues will be somewhat longer, but that they will contain fewer papers.

A few minor problems remain to be solved. These include: (1) financial arrangements for publishing exceptionally long manuscripts; (2) provision for the sale of small quantities of reprints to authors at more moderate charges; and (3) provision for relieving the unpaid editor of routine proof-reading and similar duties. The major questions, however, seem to be resolved, and *Forest Science* seems destined to become a permanent part of American forestry literature.

STEPHEN H. SPURR
Editor

Committee for the Advancement of Forestry Education

In keeping with the suggestion first made at the Biloxi meeting in 1951 and reaffirmed by the Division of Education at Milwaukee in 1954, the former Committee on Accrediting has been reconstituted as the Committee for the Advancement of Forestry Education. However the Committee has had little opportunity, as yet, to function on any items of forestry education other than accrediting.

Cooperation with the regional education associations.—Past action of the Council has expressed a willingness to cooperate with the regional education associations in the joint examination of those institutions with professional forestry curricula. During the past year, the Committee acted for the Society in the examination of the University of California in conjunction with the Western College Association. In November of this year, the Committee will examine the Forestry Curriculum of Pennsylvania State University with the Middle States Association. It appears that in the next five years the Society will be faced with the examination of one or two institutions each year, on this basis. In our cooperation with the Northwest Association last year and the Western College Association this year we have established unusually harmonious relations. The Committee is most enthusiastic about the potentialities of this type of accreditation. While the Committee will continue to be on the alert for any items that may react to the disadvantage of forestry, so far the Committee has not detected any reasons for discontinuing cooperation with the regional associations.

Higher standards for accrediting.—The Committee is in full sympathy with the demand of the Council of Forestry School Executives that the standards of accreditation should be raised. This has been a matter of concern to and study by the Committee in the past and will so continue in the future.

In its accrediting procedures, the Committee has used a system of weightings for the ten main criteria that have been established. This results in a numerical index to which the Committee, through a smaller Visiting Committee, applies a qualitative analysis. Initially the Committee considered an index of 70-75 as being critical and therefore requiring extra careful examination of the qualitative factors of an institution. More recently the Committee has raised the critical zone to 75-80.

Currently the Committee is giving serious consideration to the criteria that have been used in accrediting and to possible additions to these criteria. Consideration is being given also to possible changes in the weightings to be assigned to the criteria. The minimum number of faculty members in forestry required for an institution to meet minimum standards for professional instruction will receive special attention. The re-examination of criteria is occasioned by the increasing emphasis on such relatively new items of forestry education as forest soils,

forest genetics, and photogrammetry. The Committee views the profession of forestry as being in an important transition period. Of necessity, forestry education must reflect this change. The end result is that the standards used for accreditation cannot remain static. The standards must be raised considerably if we are to measure up effectively in our responsibilities to the profession.

The Committee specifically recommends therefore that the Council place all institutions offering forestry, both accredited and nonaccredited, on notice that the minimum standards are in the process of being raised. Such notice or forewarning is essential with the current practice of examining forestry curricula in conjunction with the regional associations. The Committee will commit itself as soon as possible with a definite statement of the standards to be used.

Enlarged responsibilities.—The Committee has, so far, not had the opportunity to function to any great degree within the larger sphere of activity implied by its new title. There are many phases of forestry education, graduate as well as undergraduate, which require continuing study. In discharging its responsibilities in this enlarged area, the Committee suggests that its findings or recommendations be discussed each year in the meeting of the Division of Education and thus have the benefit of the viewpoints of other educators and also of those members of the profession who are not in education. This broader base of discussion should result in more worthwhile recommendations to the Council by the Committee.

Membership of the Committee.—The Committee views with favor the present practice of the Council to rotate one member on and off the Committee each biennium. This should result in greater stability of policy. Due attention should be paid also to a continuation of the policy of suitable geographical representation.

Because of the new responsibility of the Committee for dealing with many phases of education, in addition to accrediting, the Committee recommends that, as soon as possible, the Committee make-up include not less than two members who are forestry faculty members, other than deans, the objective being to secure adequate representation of viewpoints based on classroom contacts with students to the greatest extent possible.

MYRON KRUEGER
Chairman

Committee on International Relations—1955

The report of your Committee on International Relations for 1954 dealt in large part with its work in organizing U.S.A. participation in the Fourth World Forestry Congress held in India, December 1954. The meeting itself and the disappointing U.S.A. attendance resulting from State Department policy have been reported in the March 1955 issue of the JOURNAL OF FORESTRY.

Subsequently, your chairman raised questions concerning the adverse effect of this restrictive policy toward all future scientific meetings of international scope, forestry and nonforestry alike, and a memorandum covering these points, prepared after discussions with the U.S.-F.A.O. Interagency Committee, was transmitted in midsummer by the Secretary of Agriculture to the Secretary of State. Beyond acknowledging its receipt, the State Department apparently has taken no action. The memorandum is as follows:

Fourth World Forestry Congress

The Fourth World Forestry Congress might be summed up by saying that from the standpoint of worldwide participation it was the most successful of all the Congresses, but from the standpoint of U.S.A. participation it was the sorriest fiasco in the annals of international conferences. This last point deserves to be elaborated later. But first, a word about these world congresses—what they are, what they are trying to do, and what they mean to the forestry profession.

They are open to all nations and to governmental and nongovernmental foresters alike. As a parallel, one might say that these world congresses are becoming to foresters what the botanical congresses are to botanists. They help eliminate duplication, they serve to bring about agreement on standards and on nomenclature. Each one has contributed in a very tangible way to the progress of forestry. They have resulted in a wider dissemination of the results of research, they have brought about improvements in forestry education and in securing needed international action. They have enabled countries like the United States and the British Empire to strengthen the hand of foresters in countries where forestry has not yet been advanced. This is particularly true with regard to the United States, which from the first has played the role of big brother to smaller and less advanced nations seeking to create forest policy. This attitude of helpfulness on our part has resulted in a very cordial feeling of good will from foresters and conservationists of many other countries.

For the forestry profession as a whole, these world congresses are the most important events to be held, and their significance and influence has been increasing with each congress. This latest one in India, for example, was attended by about fifty nations and by representatives of a number of international organizations. F.A.O. has a special interest in these congresses, since they give that organization their only opportunity to meet with foresters of nonmember nations, and give nonmember nations an opportunity to learn what F.A.O. is doing. They also afford the nongovernmental foresters—the industrial forester, the educator, and others—their only opportunity to meet with governmental men internationally.

World forestry congresses began back in 1926, when the first was held in Rome under the auspices of the old League of Nations. It had been the hope then to hold a world congress every five years, but wars and depressions have interfered, and to date there have been only four. So the need for holding these meetings at more frequent intervals was realized by those of us working on the Interim Commission for F.A.O., who had the responsibility of drawing up a blueprint of activities for their Division of Forestry. It was felt that F.A.O., as a continuing body, should take the initiative in canvassing member nations at 5-year intervals for the purpose of securing a host nation for the world congress.

So in 1952 F.A.O., in line with that responsibility, queried member nations as to whether one of them cared to be host for a Fourth World Forestry Congress to be held in 1954. Lyle F. Watts, then chief of the Forest Service, called a meeting of federal, state, professional, and private organizations to discuss this request. At this meeting was a representative of the State Department. The final decision was that the United States would not offer to be host, and for this there were two reasons. The first was economic, for to have held the congress here would have imposed hardships on foresters from the sterling area. The second reason had to do with security considerations. It would have been very difficult to clear foresters from certain countries, and other countries could not even have been invited.

There was, however, a general feeling expressed that India might be a desirable host nation, both from the economic standpoint and also because she could invite without restriction countries on both sides of the Iron Curtain, and thus secure a world congress in a really meaningful sense. Somewhat later it was learned that India had been chosen by the F.A.O., and the date for the congress was set for December 1954.

A subcommittee of the Interagency Committee then began active preparation for U.S.A. participation by calling a meeting on April 23, 1954. At this meeting were various representatives of government agencies having to do with forestry, representatives of forestry associations, foundations, and industries, and a representative of the State Department.

No question was raised at this meeting as to whether or not the U.S.A. would officially participate. That seemed to be taken for granted. The chief question was what kind of material should be prepared, what exhibits and motion pictures should be gathered together, what papers should be written, and how many official delegates should be requested.

At some time in May, the State Department queried its Embassy in India as to whether or not Red China had been invited to the Congress. The Embassy investigated and replied that Red China had been invited. During all this time,

then, there was no indication that the United States would not officially participate. In fact, in October, a meeting was held at the State Department to discuss the composition of the U.S.A. official delegation.

Meanwhile, papers had been prepared by American foresters, exhibits were got together from federal, state, and private sources, and a number of the best motion pictures selected. The Secretary of the Special Committee forwarded to India all the requests for field trips, reservations for quarters, for travel, office and mess preparations for the 26 participants.

Then, in the week of November 15, less than a month before the congress, and after several foresters had already left the United States or other points of departure, the State Department decided to decline India's invitation. So late was this decision forthcoming that one federal forester had reached Rome before he was ordered back, and another actually got as far as Delhi, a distance of 120 miles from the site of the congress, before he was told to go home.

The decision, of course, meant a prohibition against attendance by any federal forester. It meant no showing of U.S. exhibits or motion pictures, and out of a total of 26 who had expected to attend the congress, and for whom all preparations had been made, only seven reached the congress.

No purpose would be served by describing what this belated decision meant to the few puzzled survivors who finally arrived at Dehra Dun, for however uncomfortable a situation had been created for them, it is beside the main question: whether or not our national interest was well served by the State Department's decision.

I do not feel competent to evaluate the overall effect on the U.S. of this policy, but I can certainly evaluate its effect on F.A.O. and on American forestry, and that effect was unqualifiedly bad. We had been among the leaders in advancing international forestry; we had been one of the prime movers in establishing these world congresses. Now, by an action difficult to understand and explain, we had completely reversed our position and had deprived ourselves of an opportunity for cooperation that happens only once every five years. We had prevented our federal foresters from deriving the benefits of contact with fellow workers from other countries, and we had cut off our best tropical foresters from taking part in the first major meeting ever to be held on that subject.

This Fourth World Forestry Congress gave an opportunity to the foresters of the United States never before equalled —the opportunity to bring before the delegates of almost fifty nations the story of what we are doing in forestry, soil conservation, and resource management. We had the men to tell this story, we had motion pictures unrivaled in the world, we had exhibit material brought together from every part of our country for this specific purpose.

It was a story that could have been most helpful to the smaller nations. It could have had an influence in turning the eyes of some of those nations to the West. But suddenly we cancel this all out, and with one gesture we give the center of the stage to Russia and Red China. Further, the State Department's action had injected a political note into a meeting which was purely scientific and professional, and gave the Red Chinese an unrivaled opportunity to deplore in the public press the fact that political considerations should be injected by the United States into a professional meeting. It gravely damaged the efforts of some of us for over a decade to bring forestry forward as one of the vehicles for creating better cooperation, better feeling, and greater solidarity among nations.

It put the U.S.A. at a distinct disadvantage in relation to the U.S.S.R. and Red China. Their delegations were not only active in discussions, but they had brought with them a great deal of material showing forestry activities in their countries. We of the United States had a much more impressive story to tell the nations of the world. We had a much more fundamental contribution to make than the U.S.S.R. or Red China, but we could do nothing, and the effect on those other nations was all too obvious.

Finally, although not so intended, the refusal of the U.S.A. at that late date to accept India's invitation was construed in many quarters as a distinct rebuff to her government.

All that belongs to the past, and is beyond change, and there could be no good reason for relating it except for the shadow of uncertainty that it casts upon all future meetings at which Red China—or East Germany, for that matter—may be present. This is far from an academic consideration, since the problem is likely to arise in the near future. For example, one of the actions of this congress has been to set up a continuing panel on higher forestry education. This panel may be called upon to meet within a year. Its subject matter is of basic importance to forestry, and certainly the U.S.A. should be officially represented. But can it be, in view of the fact that Red China is a member?

This same question may be asked about meetings having nothing to do with forestry, meetings that individuals and agencies of the U.S. Government may well be interested in.

So, are we to go on appearing to sulk in our tents when these meetings are held, refusing to participate in professional and scientific programs solely because of the presence of delegates from Red China? It is a question that can hardly be satisfactorily answered by saying that each case must be decided upon its merits. If left to such vague phraseology as that, we may face the same uncertainties and delays that have plagued us in the past. Are we not justified, then, in asking for a clearcut policy, in order that we may know what to expect in the future, and to know it well enough in advance to make adequate preparation, and thus prevent such a debacle as attended the Fourth World Forestry Congress? Is this not a matter of enough importance to call for a clarification of government policy with regard to future scientific and professional meetings having nothing to do with political matters? Further, should the decision be against our official participation, should we not encourage the widest possible discussion and reconsideration of such a policy which places us at grave disadvantage internationally and works to undo so much of our past efforts?

Any final decision must, of course, come to rest upon a construction as to what is to our best national interest. But unless some ponderable gain is involved, it seems scarcely in the national interest to abandon our past position of leadership and of active participation, and allow it to be assumed by unfriendly countries. Neither does it seem in the national interest to cut off our professional workers—in forestry or any other field—from contacts and opportunities that make for their greater effectiveness, and that ultimately should make for a stronger nation.

Duties of the Committee on International Relations

The Committee on International Relations has to do with forestry activities throughout the world. Its function is to exchange information and foster cordial relations between the Society and foresters of other lands in order to further the effectiveness of American forestry and American foresters both here and abroad.

Specifically, its duties include:

1. Pressing for adequate forestry recognition in U.S. Government programs having to do with resource management abroad.

2. Urging adequate U.S. participation in important international forestry meetings, both governmental and nongovernmental.

3. Keeping the membership informed of important foreign meetings, and reporting on their outcome.

4. Nominating distinguished foreign foresters for Honorary Membership, and appraising qualifications of applicants for Corresponding Membership.

5. Recording additions to foreign forestry literature of interest to our membership.

6. Acting as a source of information and assistance to visiting foreign foresters and to our members going abroad.

7. Contributing foreign notes to the JOURNAL OF FORESTRY.

TOM GILL, *Chairman*
Committee on International Relations

International Meetings of 1955

Among international meetings of 1955, one of the most important was the third session of the F.A.O. Asia-Pacific Forestry Commission, held in Tokyo, Japan, April 9-21. Paul W. Bedard, member of your Committee, served as chairman of the U.S.A. delegation, and G. E. Doverspike as secretary of the Committee on Forestry Inventory. Paul Zehngraff and J. B. Harbison were also members of the U.S.A. delegation.

A review conference of the Commonwealth Agricultural Bureaux was held in England during the past summer, and was attended by Dean J. W.

B. Sisam. The Commonwealth Forestry Bureau is one of the units of this organization, and is now working in cooperation with the Society in developing the background for multilingual dictionaries in forestry.

In Madrid, Spain, the eighth session of the International Poplar Commission was held April 25-28, and was attended by Ernst J. Schreiner and John R. Hansbrough as official U.S.A. representatives. So extensive has been the exchange of poplar planting stock between countries and continents that problems of propagation have taken on an international character.

The fifth session of the Latin American Forestry Commission of F.A.O. was held this year in Caracas, Venezuela, October 4-15, too late to be reported on here. The U.S.A. delegation consisted of four foresters. Perhaps of chief importance on the agenda of this meeting was discussion of the creation of a Latin American Forest Training and Research Institute, to be located at the University of the Andes, in Merida, Venezuela.

November 4 the biennial conference of the United Nations Food and Agriculture Organization will be held in Rome.

Forestry Publications

Among forestry publications received have been several from F.A.O., including *World Forest Resources—Results of Inventory Undertaken in 1953* (120 pp.), *Tree Seed Notes* (354 pp.), *Handling Forest Tree Seed* (110 pp.), *Tree Planting Practices for Arid Areas* (126 pp.), *Report of the Third Conference on Wood Technology* (204 pp.), and *World Pulp and Paper Resources and Prospects* (102 pp.), the latter a co-operative undertaking with the secretaries of UNESCO, ECE, and ECLA.

From the Japanese Forestry Agency have come a number of bulletins and books prepared as background material for the third session of the F.A.O. Asia-Pacific Forestry Commission meeting held in Tokyo last April. Among the subjects covered are *Forests in Japan, Forestry of Japan, Erosion Control, Reforestation, Forest Products and Wood Industry,* and *Forest Survey by Aerial Photograph.*

As part of the background material for the fifth session of the Latin American Forestry Commission, F.A.O. has distributed to participants in the meeting a set of reports on the present status of forestry problems and progress in Argentina, Brazil, Chile, Colombia, Cuba, Guatemala, Haiti, Honduras, Panama, Paraguay, and El Salvador. These may later be made part of the printed proceedings of the meeting, but at present are on file in mimeographed form in the office of the chairman of your Committee. Also, received, in midsummer, was *Los Recursos Naturales de Mexico—Estado Actual de las Investigaciones Forestales,* by Enrique Beltran. This volume, published by the Instituto Mexicano de Recursos Naturales Renovables, A.C., is the Spanish language edition, unabridged, of Part III of the Society's report on *Forestry and Related Research in North America.*

Not yet received but probably soon available is the printed report of the Fourth World Forestry Congress. Prospective purchasers are advised by Congress officials to register their names with the Rapporteur-General, K. L. Aggarwal, president, Forest Research Institute and Colleges, P. O. New Forest, Dehra Dun, India, as soon as possible. He will also be able to give information concerning the price, which as yet has not been announced.

Other Activities

During the year material was prepared by your Committee for the submission of nominations of four outstanding foreign foresters for Honorary Membership, who were subsequently elected by the Council. Four nominations for Corresponding Membership were also approved.

The Committee has provided letters of introduction and assistance with itineraries to foresters going abroad and foreign foresters visiting the United States. It has also continued its efforts to urge the need for a definite forest policy in connection with all resource development projects abroad.

The chairman continued to act as representative of the Society on the U.S.-F.A.O. Interagency Committee, and as member of the Executive Committee of the National Conference on F.A.O.

There can be small doubt but that in the years ahead, as forestry becomes a universally recognized activity, especially in Latin American countries, the influence of American foresters and American forestry will be felt with increasing impact. Already many countries have turned to our technicians for advice and aid in administering their resources. Here one regrets the failure of certain agencies of the federal government charged with activities in the foreign resources field to properly appraise and adequately carry out their forestry responsibilities.

In the Washington office of I.C.A. (formerly F.O.A.), for example, there is no technical forester, and the forestry activities are relegated to a Special Commodities Branch of the Office of Industrial Resources. Attempts at improving this situation have been made by your Committee in the past, with no success, and it will undoubtedly remain one of the major responsibilities of this Committee to press for a proper appreciation of the "nonindustrial" functions of forestry in agriculture and all other forms of land management within our federal organizations having programs for resource use in foreign lands. Until that happens, there remains the very real danger of facilitating forest destruction among the countries we are attempting to help.

Your Committee at this time is sending to the Council a statement of suggested functions and specific duties for future work.

Summing Up

This report is your chairman's swan song. He will have served nine years, and at the close of the year is relinquishing responsibility into other and, he is confident, more able hands.

Those nine years have seen an immense increase in the scope of your committee's work because of the impressive expansion in world forestry and in U.S.A. participation. They have seen the Food and Agriculture Organization grow from very small beginnings into a worldwide organization. Through F.A.O.'s Regional Forestry Commissions, geographic machinery is now available to bring together the top forestry administrators and leading technicians at regular intervals in Europe, the Near East, the Far East, and Latin America. Of especial interest in the world view is the rapidity of developments in research. Under unilateral and bilateral technical assistance programs, advice and assistance in forestry are resulting in a period of unprecedented activity on an international plane.

The past nine years have seen the resumption of world forestry congresses, and the first congress ever to be held outside of Europe. And in response to world demands, the U.S. Forest Service has created a Foreign Forestry Section.

This expansion of world forestry activities is reflected in the field of professional literature, and a note from *Forestry Abstracts* of the Commonwealth Forestry Bureau may be of interest: "The postwar development or revival of organized forestry all over the world has witnessed the

appearance or resuscitation of numerous publications carrying forestry material, while an increasing number are also becoming available from the countries of eastern Europe. Abstracting is therefore faced with a growing diversity of tongues; since 1951 Greek, Icelandic, Javanese, Latvian, Macedonian, Persian, and Siamese have all had to be arranged for at this bureau, and a total of over 30 languages is now regularly dealt with."

In personal letters your chairman has already thanked, however inadequately, the members of his committee for making its work possible. But this report would be incomplete if it did not acknowledge also a debt to Henry Clepper for his unfailingly sympathetic help.

PAUL W. BEDARD
I. T. HAIG
V. L. HARPER
LEROY HUNTINGTON
BARRINGTON MOORE
LYALL E. PETERSON
J. W. B. SISAM
TOM GILL, *Chairman*

Committee on History of Forestry

Forestry in America is not so very old. It is only 80 years since the American Forestry Association was organized. It is only 70 years since state forestry departments were established in California, Ohio, and New York; 68 years since Massachusetts Agricultural College first gave lectures on forestry; 55 years since the Society of American Foresters was founded; and 50 years since the Forest Service was created. Despite its youthfulness, forestry is old enough to have a past—a past fraught with many trials and tribulations, doubts and fears, with many failures, but also with many great successes. The story of the profession is one of courage, faith, and of belief in the public good. Our past is not so far behind us that we cannot still recapture some of the spirit and enthusiasm which made forestry—and conservation—household words throughout America. But while the past is not so very far behind us, it is far enough that already we are losing touch with it as the ranks of our elders, who participated in the beginnings, grow thinner and thinner. It is up to us now to obtain from them in so far as we are able, their own interpretation of the events in which they participated and which were and are part of their lives.

> I have often thought in reading the history of our country, how much is lost to us because so few of our Presidents have told their own stories. It would have been helpful for us to know more of what was in their minds and what impelled them to do what they did.

This quotation from the Preface of his memoirs by former President Harry S. Truman is as true of foresters as of presidents. The profession has lost much because many foresters of the formative years have not given us the background of their times. We of today would like to know far more of what was in their minds, how and why situations developed, why problems arose, and how decisions were reached.

The main purpose of the Forestry History Committee is to stimulate the recording of forestry events and the chronicling of forestry developments and experiences. To the extent that the Society maintains its interest in past events, the job is a continuing one. History is never finished, is never ended, for what happens today is part of the history of tomorrow. Your Committee has long been in existence under different chairmen. Outstanding has been the work of Prof. Emeritus Ralph E. Hosmer whom the Society has repeatedly honored, and of Robert K. Winters who developed the book "Fifty Years of Forestry." The Committee in times past has seen to it that the history of the Society was prepared. It has also encouraged others to prepare histories of events in which the author participated.

In the past two years the Committee has taken a close look at all that previous Committees on History have accomplished. It has diligently tried to find some way of increasing its usefulness to the Society. It has endeavored to turn up some method of preserving more of the past and getting onto paper the story of the development of policies and programs that are so much taken for granted by the foresters of today.

The Committee has reviewed the entire field of forestry, the many specializations represented in the Society, the numerous organizations interested in or responsible for forestry objectives. It has considered many historical and biographical works to determine what has been done as a guide for what needs to be done in order to adequately record the progress of forestry in the past 75 years. It has concluded that what has been done is fine, but that there are still large gaps in our knowledge, and there are many lines of work and many programs on which relatively little detailed historical work has been done.

For example, legislation. Consider the public forest acquisition under the Weeks Act. The act is well known and many purchases have been made. The events leading to the Act have never been made known. Now William L. Hall is completing the story of events which led to the Act, a story that had its beginning in a meeting of business men who worried over the loss of business because of recurrent floods following fire and cutting in the mountains.

An activity which has not been adequately covered historically is organized fire control. Although forestry has gone far in the subject, the full story of its development, policies, and programs is yet to be told. Also, practically nothing has been prepared on the history of fire or of fire control for our various types, regions, states, or localities. The only comprehensive such study is that of S. B. Show for California, augmented by a study of fire control policies in the California state forester's office by C. R. Clar. The situation in fire, however, is not unique; it can be matched by other activities such as reforestation, working plants, cutting methods, recreation, and the like.

Comprehensive studies of the various public agencies is also needed. Several works on the Forest Service have been prepared, but there are still gaps in presenting the development of policies and programs. For the states, a major work is under way under the editorship of Erle Kauffman. All but a few of the states have completed their contribution, but the work is held up until the holdouts cooperate with the others. Whether this effort will tell adequately the manner in which each state forestry effort came into being, and present fully the development of policies and programs, remains to be seen. Certainly something special is needed by such states as California, Ohio, and New York which will celebrate their 75th anniversaries at the same time the Society celebrates its 60th birthday.

The history of other federal agencies with forestry responsibilities was covered briefly in the Society's "50 Year History." Very little has yet been told of the development of forestry in such agencies as the S.C.S., T.V.A., Extension Service, the various bureaus in the Department of the Interior, and others. Especial attention should be directed to the Bureaus of Entomology and Plant Industry where programs

that have vitally affected forestry practice and national policy have been carried out. Again, in addition to the overall picture, there should be local and regional histories for each agency. All of the public agencies have had a part in the development of the profession, in the forestry movement, and in public education. Each has participated in large programs, and each has shared in the public confidence. Each has major responsibilities and definite obligations. The events which led to the creation of these agencies, their underlying and continuing policies, and their programs should be fully recorded while those who shared in the development are still with us. A few years more will be too late.

There are many other organizations having marked forestry interests and concerns. For example, the Western Forestry and Conservation Association has wielded great influence on forestry thought in the Northwest since 1909. The American Forestry Association was organized in 1875, the American Nature Association started out in 1922, and the Save the Redwoods League began in 1918. Each of these groups has helped in the forestry movement, has sponsored legislation, has promoted programs, and has aided in public education. The full story of their creation, their activities, and their interests is a part of forestry history.

There are many other organizations operating on a national, regional, or local basis and with varying degrees of forestry interest. And for each such agency in existence today, there have been perhaps 10 others who for one reason or another have dropped out of the picture. What were these groups; what did they accomplish; who and what was behind them? The record of their work should be preserved.

Then, too, there are numerous industrial and other specialized interest groups banded together to foster one or another phase of forestry. For example: Trees for Tomorrow, supported by paper mills and power companies in Wisconsin promotes forest management and reforestation by land owners. The Southern Pulpwood Conservation Association, supported by the southern paper industry, promotes the idea that trees are a crop. The National Lumber Manufacturers Association promotes the cooperative approach to forestry problems. Thus the interest of business groups may be tremendous, far-reaching, and specific, though other groups may have only academic interest in forestry. However, the Society, as well as the future should know something of the background of these groups, what they have done, and how they have affected the forestry movement and the profession. So far, your Committee has not found much historical background for any of these groups.

Your Committee has made a start in plugging some of the gaps. It realizes that most of those who are currently retiring from active work in forestry are the links which unite the present with the past. Many retirees were involved in one way or another with events of the first quarter-century. The Committee has embarked upon a program of contacting these foresters, and some who have not retired, to obtain from them histories of activities in which they participated. The program of the Committee has been laid before the Council in detail. Briefly, it involves a 10-year effort—or 5 years if it is decided to step it up—with some financial help to meet expenses where special projects and problems are involved. It is suggested also that the Society publish some of the more valuable papers.

Should the Council approve the project, the Committee on Forestry History will have a real job cut out for itself. If not accepted, a determination will be needed as to just what should be the function of the Committee. The change of the Forest Products History Foundation over into the Forest History Foundation places the matter in a whole new light.

As a concrete accomplishment of the past year, several manuscripts of historical value have been uncovered. Arrangements have been made to have these placed in official files or library depositories. In addition, several foresters have already embarked upon histories of special subjects at Committee suggestion.

The Council, at its June meeting in Missoula, requested that this Committee "make a survey of what is being written on history and then to determine specific areas wherein work needs to be done."

The Committee has endeavored to carry out this request. It has information on nine historical writings now under way, not counting the several works which the Committee has helped spark. The Committee's study of the situation, covering some 400 topics, has disclosed there is no forestry activity; no agency (public, quasi-public, private); no educational institution; no basic national or state legislation, which does not need historical study. Some subjects appear of major concern. This whole matter has been the subject of a special report to the Council.

The Committee recommends its continuance. The program and the manner of its conduct have been presented to the Council for consideration. If approved, the Committee will have a major job on its hands and will need the help and support of the rank and file of the Society's membership.

E. H. FROTHINGHAM
W. L. HALL
RALPH HOSMER
W. D. MILLER
RONALD ROTTY
E. N. MUNNS, *Chairman*

Committee on the Library Of Congress Collection of Foresters' Photographs

The collection in the Library of Congress contains photographs of less than 15 percent of the Society's membership. But it is in excellent order, well indexed and easily available. It has already proven of value on occasions when members of the press and others wished to obtain a picture of a certain forester for publication purposes, and as time goes on I expect this use will increase.

We again call to the attention of all foresters the importance of sending in their photographs and a short biography if they have not already done so. They can be mailed to me, to the Society's headquarters, or to the chairmen of the Section committees.

The collection is not an honor-roll. We simply are trying to include a photograph of everyone who has contributed or is contributing to what we all consider to be one of the foremost professions, the science of forestry.

HELMUTH BAY
Chairman

Committee on Safety

During the last year, your Committee has completed a "Fact Sheet on Accident Prevention Material Sources." This has been distributed to forestry schools. A supply is available here today also, or copies can be ordered direct from your chairman.

The safety bulletin on "Steps in Organizing a Woods Accident Prevention Program" has been completed. We plan to submit this to one of the lumber journals soon.

The "Fact Sheet on Methods of Safety Instruction," about which we

reported last year, is not yet completed. We hope this will be our most active project next year.

We have been instrumental in getting the United States Forest Service to send to all forestry schools the State University of New York College of Forestry's very fine write-up on its comprehensive safety program. A few copies of these are available for you here also.

We would like to again offer our services to any Society member or to any organization connected with forestry, in case it is felt that we can help you with your safety problems. Also, we would be glad to get your suggestions as to how we can best redeem our responsibilities as your Committee on Safety.

E. T. CLARK
OVID L. HOLMES
HARRY H. JEFFERSON
J. KENNETH PEARCE
SETH JACKSON, *Chairman*

Committee on Forest Protection

The present membership of the joint Society of American Foresters—American Society of Mechanical Engineers Forest Protection Committee is as follows:

S.A.F. Members	A.S.M.E. Members
A. A. Brown	I. C. Funk
Charles Cowan	W. E. McCraw
W. D. Hagenstein	Horatio Bond
Henry Clepper	
Gilbert I. Stewart	

Last year our Committee raised several questions about its function as originally conceived and requested the president to consider whether or not the present Committee should be continued. The president, in turn, requested the Committee as now constituted to continue, but asked that they re-study the need and recommend any changes in the makeup or function of the Committee that they believed would be appropriate.

Apparently, the chief function of the Committee, as originally visualized, was about as follows:

It would sponsor development work in fire equipment. It would do this by selecting equipment problems and new equipment ideas that it regarded as important and would take these up through the A.S.M.E. members of the Committee in order to utilize expert help through the A.S.M.E. and through specialists employed by various manufacturers. This objective was excellent and still has validity. But in practice the procedure did not prove very workable. Members of the A.S.M.E. Wood Industries Division, with which the Committee is associated, are primarily interested in equipment for manufacturing and finishing wood products. This has proved a handicap in establishing the liaison intended. In addition, many of the questions now of special interest to fire control men call for help from automotive, electrical, or chemical engineers or research scientists in fire physics, electronics, and many other fields. Industry A.S.M.E. representatives on the Committee have found considerable difficulty operating as professional representatives, since the corporation by which they are employed seemed always foremost in their minds and in those of other commercial representatives with whom they correspond on Committee business.

A Technical Equipment Board is now operating within the Forest Service to pick up equipment development ideas and to give them sponsorship and financial support. Usually, the man with a worth while idea is helped to develop it by local mechanical engineers. As soon as it is developed to pilot model stage he is put in touch with qualified manufacturers or the model is put into the hands of an equipment development center or a manufacturer for further development where the skills and facilities are available to make progress.

Perhaps even more important, there was no facility through the S.A.F. for regular contact with fire and fire equipment problems in local and regional areas. As a consequence, some of the S.A.F. members felt they were trying to operate as a small isolated group at the top without any roots for their activities.

Prior to the annual meeting at Portland, these questions had been explored by correspondence with all members of the joint Committee. This was followed by a meeting at Portland of all members present, prior to the annual Business Meeting of the S.A.F. The conclusions and recommendations of the Committee are briefly as follows:

The Committee organization and its functions badly need to be overhauled to provide more effective service to the Society. Equipment is never an end in itself and should not be the sole concern of the Committee. Science and technology have been moving so rapidly in the last ten years that there is a very strong need to bring it to the service of forest fire control in every possible way. Among state and other protection agencies outside the Forest Service, the media for interchange of ideas and information are inadequate. "Fire Control Notes" is now the chief medium. The prevalence of the need is well illustrated by the almost universal demand for this publication by field men of all fire control agencies.

For these reasons, it was concluded that the S.A.F. should undertake more activity and more service in this field and that the Committee should assume leadership in meeting this responsibility. The most important functions that this Committee should undertake would be about as follows:

1. Provide a better clearing house for information and reporting on fire technology and equipment.
2. Promote dissemination of information through S.A.F. channels.
3. Give direct service on local problems.
4. Give assistance to program committee of S.A.F. to insure timely coverage of important developments in forest fire control at annual meetings.

To function in this way the Committee needs to have ready channels through every S.A.F. Section to the interested members in each Section. We believe this can be accomplished by direct correspondence with the Section chairman or with a Section Fire Protection Committee appointed by the chairman. This contact should preferably be maintained by a regional sectional representative of the national Protection Committee rather than directly by the chairman of the Committee.

Some of the things that should be undertaken to fully carry out the functions mentioned would be as follows:

All members would actively sponsor better coverage and reporting of equipment ideas and developments in "Fire Control Notes" that came to their attention.

The Committee as a whole would become familiar with all Equipment Development Reports and take action to disseminate their findings to non-Forest Service agencies.

The Committee would assist in promoting fire programs in the various sections.

It would make informative reports to the Society for reference of all members for reproduction in the JOURNAL annually and would encourage timely professional articles for the JOURNAL on fire control subjects.

The most productive relationship with engineering societies needs also to be reconsidered. It is possible that

a small council of delegates from the various engineering societies would be helpful. Questions in this respect were deferred until more study can be made.

Mr. I. C. Funk, currently the joint A.S.M.E. Committee chairman, was not available, but had previously expressed the opinion that it would be well for the S.A.F. members to determine what service they should undertake to the S.A.F. as a first step.

Action will be taken to follow up on these recommendations during the current year.

A. A. BROWN
Chairman

Committee on Civil Service

The Civil Service Commission has decided to announce an examination, on October 18, 1955, which will admit all college graduates who obtain a bachelor's degree. It will be called the "Federal Service Entrance Examination." Provision will be made to permit applicants to specify the positions for which they are applying; for example, forester, entomologist, plant pathologist, etc., the same as on the old Junior Agricultural Assistant announcement, which will be discontinued. The Junior Forester (with Range option) register will be maintained, as now, by the U.S.D.A. Board of Examiners. So there will be no change in the certification procedure.

There is an important change, however, in the new Federal Service Entrance Examination, that is, there will be no closing date for the acceptance of applications, but assembled examinations will be held at quarterly intervals, when new names will be added to the register as papers are rated. This change in procedure will permit graduates of schools on a quarter system to file for federal positions whenever they receive degrees, as well as other qualified applicants to apply at any time during the year.

The following research positions, grades GS-7 and above, will be included in a new Agricultural Research Scientist examination announcement, which will also be an open continuous examination with no closing date for the receipt of applications specified.

Forester (Forest Management Research)
Forester (Silviculture)
Forester (Mensuration)
Forester (Forest Influences)
Forester (Fire Research)
Technologist (Forest Products Research)
Range Conservationist (Research)

R. J. PRESTON, *Chairman*

Report of Council Meeting

A meeting of the S.A.F. Council was held October 16, 1955 in the Multnomah Hotel, Portland, Ore. All eleven members were present: President E. L. Demmon, Vice President DeWitt Nelson, William J. Brown, C. H. Coulter, D. B. Demeritt, S. G. Fontanna, P. D. Hanson, E. F. Heacox, J. S. Illick, J. H. Stone, and R. H. Westveld; together with Henry Clepper, executive secretary.

Forest Science

S. H. Spurr, editor of *Forest Science*, presented to the Council a report for the year 1955, and a proposed budget for 1956. His report is published elsewhere in this issue.

On motion by Dean Fontanna, seconded by Dr. Demeritt, the Council voted unanimously to accept the report of Dr. Spurr with thanks and with commendation.

The Budget

Miss L. A. Warren, business manager, reported to the Council on Society income and expenses for 1955, and the proposed budget for 1956.

On motion by Mr. Demeritt, seconded by Mr. Coulter, the Council unanimously commended Miss Warren for her efficient handling of the business affairs of the Society, and the office employees for their work during the year and for their loyalty to the Society and the membership.

Report on Advertising

Lloyd Thorpe, advertising representative for the JOURNAL OF FORESTRY, reported to the Council on results for 1955 and plans for 1956.

On motion by Mr. Nelson, seconded by Mr. Hanson, the Council voted unanimously to commend Mr. Thorpe for his accomplishments.

Policy on Publications

At the Council meeting held July 14-15, 1955, Arthur B. Meyer, editor of Society publications, had recommended that a statement of editorial policy for the JOURNAL OF FORESTRY be formulated. A committee, to be selected from the editorial board, was authorized, and subsequently appointed as follows: John W. Duffield, Ralph W. Marquis, and Arthur B. Meyer. This committee drafted a proposed policy on publications, which was presented to the Council for approval.

On motion by Mr. Heacox, seconded by Mr. Hanson, the Council voted unanimously to approve the statement of policy in principle and to refer it to the editorial board for final approval and wording.

The final policy statement follows:

JOURNAL OF FORESTRY POLICY ON PUBLICATIONS

The Constitution of the Society of American Foresters directs that "The Society shall publish (1) a monthly technical forestry periodical known as the JOURNAL OF FORESTRY. . ."

1. The principal functions of the JOURNAL OF FORESTRY are to serve as a forum for discussion of research, practice, and development in all branches of forestry; to provide a medium for exchange of professional thought including matters of policy affecting forestry; to serve as a repository for professional knowledge; and to represent, advance, and protect the interests and standards of the profession of forestry. Secondary functions may include dissemination of current news of people and events in forestry and, when prescribed by the Council, publication of internal Society matters known as Society Affairs.

2. As the practice of forestry is founded upon its sciences, we will strive to keep our readers informed of significant findings in basic research through the publication of material that is accurate, competently prepared, and up-to-date. We will insist that authors give full credit to others, so far as their knowledge goes, for procedures and methods devised or discovered and ideas advanced or aid given. We will render all possible assistance to authors in so doing.

3. Realizing that the practice of forestry, though based on its sciences, is equally concerned with the application of knowledge obtained, we will also strive to present material of day-to-day job application by practicing foresters, including material of general interest to the profession.

4. We will endeavor to present a balance of published material involving specific subject matter fields and regional interests.

5. We will discourage exhaustive discussion of individual opinions in matters of interest to only a limited number of readers as well as publication of material that is by its nature restricted in application, deals with matters of general knowledge to the profession, or consists of abstractions or philosophical speculations that are not original or that do not contribute to the principal functions of the JOURNAL.

6. We will demand of our contributors (a) something worthwhile to say, (b) their best efforts in presenting it in a readable and interesting way, and (c) that they demonstrate clearly its present or potential significance to the science or practice of forestry.

7. We, and all who contribute to our pages, are free to express what we think. We shall not, in order to please anyone, say anything that we do not believe to be true or repress any criticism that we honestly believe to be just. We will strive always for the maintenance of courtesy and good temper, and we will not permit the publication of criticisms that verge on harshness of expression or that deal with personalities.

8. While encouraging members of the profession to assume their rights and duties as individual citizens, we will insist that discussions of forest policy be presented in such a manner as to avoid confusion with partisan political policies.

9. We will encourage the younger members of the profession to contribute to professional literature and will render such aid as is possible to them.

On motion by Mr. Heacox, seconded by Mr. Nelson, the Council voted unanimously to commend Mr. Meyer for his satisfactory work as editor of Society publications, and particularly for his editorial contributions to the *Forestry Handbook*.

Committee on Tree Names

As reported in the minutes of the Council meeting held June 14-15, 1955, the Society had been invited to cooperate with bodies concerned with international plant nomenclature in recommending the names of tree species of outstanding economic importance that should be restored or retained. This development arose from a resolution presented to the Council that the name of Douglas-fir *Pseudotsuga taxifolia* be restored.

Detailed information about this matter was published in the JOURNAL for October 1954 (page 803); January 1955 (page 53); and August 1955 (page 603).

Last June the Council authorized a special Committee on Tree Names to make recommendations as to specific names and procedure. This committee's report follows. On motion by Mr. Heacox, seconded by Mr. Coulter, the Council unanimously accepted the report with thanks and instructed the executive secretary, with the advice and guidance of Chairman Dayton, to take the actions recommended.

STABILIZATION OF IMPORTANT TREE NOMENCLATURE

Your committee, unable to meet physically, has been under the necessity of conducting its business by correspondence. We have reached the conclusions indicated below.

1. The need, in behalf of horticulturists, agronomists, foresters, physiologists, biochemists, pathologists and other biological workers, for a measure of relief from an unsettled nomenclature, has been set forth with great clarity and emphasis by Dr. Wendell H. Camp (now head of the Department of Botany, University of Connecticut, Storrs, Conn., and a former president of the American Society of Plant Taxonomists) in his article "Codes, Taxonomic Coding, and Types" [Taxonomic Index 17 (4, 5): 45-48. Sept.-Oct., 1954].

2. As a committee of the Society of American Foresters we welcome the opportunity thus afforded foresters to contribute to a discussion of this problem and to help, if possible, in some reasonable solution.

3. Article 4 of the International Code of Botanical Nomenclature (Utrecht, 1952) states that the first essential point in nomenclature is "To aim at fixity of names." We are in hearty agreement with such an aim, and recommend renewed attention to that aim on the part of future framers of the Code.

4. We unanimously recommend to the Society that it endorse the *principle* embodied in the article by Dr. Elbert L. Little, Jr., "Rejection of Obscure Plant Names Unaccepted within a Century" [Phytologia 3(3):87-89. July, 1949] under which the priority rule (Article 16 of the Code) could be modified to outlaw changes due to the discovery of an obscure name a century or more old. Some members of the committee, however, think this period could be reduced, say, to 50, 25 or even 10 years. Incidentally, such a revision of the priority rule would be in harmony with Article C. 12 of the "Proposed International Code of Nomenclature for Cultivated Plants" published as Appendix III of the International Code of Botanical Nomenclature.

5. The International Botanical Congress at Amsterdam in 1935 appointed "A Special Committee for Nomenclature of Economic Plants," the purpose of which was to prepare a sort of check list of such plants, primarily for nontaxonomists. That list was never completed. Our committee, with one dissenting vote, suggests that our Society recommend reappointment of such a committee for economic plant nomenclature, *provided suitable personnel can be obtained*, to the appropriate authorities (listed under "(8)" below).

6. The Committee membership divides 50-50 on the desirability of lists of *nomina specifica conservanda* and *nomina specifica rejicienda*. In view of what has happened at previous international botanical congresses it realizes the latter has a much better chance of adoption than the former. If we can get a modification of the priority rule [as indicated under "(4)" above] or a kind of standard economic plant list [as indicated under "(5)" above] such lists of conserved or rejected specific names might not be needed to obtain the relief desired.

7. The committee unanimously recommends that, by one or more of the methods indicated above, use of the scientific name *Pseudotsuga taxifolia*, the most important timber tree of the United States, if not in the world, be legalized. By the same token, but with one dissenting vote, your committee also recommends effort to legalize the following scientific names of two important American trees, *Sequoia gigantea* and *Betula lutea* and agreement to accept *Populus balsamifera* (*vice P. tacamahacca*) for balsam poplar and *Quercus rubra* (*vice Q. borealis*) for northern red oak, the latter two names in question because of typification problems.

8. Your committee recommends, if the President and Council and Society approve this report, that copies of it and/or of Society resolutions possibly based thereon be sent to the following key persons:

Dr. Jacques Rousseau, President of the Ninth International Botanical Congress. Director, The Montreal Botanical Garden, 4101 Sherbrooke St. E., Montreal, Quebec, Canada.

Dr. John S. L. Gilmour, Chairman, "The Committee on the Stabilization of Nomenclature"; Chmn., International Committee on Horticultural Nomenclature. Director, University Botanic Garden and Fellow of Clare College, Cory Lodge, Botanic Garden, Cambridge, England.

Prof. J. Lanjouw, Exec. Sec., International Bureau of Plant Taxonomy and Nomenclature and of the International Association for Plant Taxonomy, 106 Lange Nieuwstraat, Utrecht, Netherlands.

Prof. Reed C. Rollins, Director, Gray Herbarium, Harvard University, 79 Garden St., Cambridge 38, Mass. President, International Association of Plant Taxonomists.

HENRY I. BALDWIN
KEITH W. DORMAN
JOHN W. DUFFIELD
PHILIP G. HADDOCK
ELBERT L. LITTLE, JR.
WILLIAM A. DAYTON, *Chairman*

Report of Special Committee on Society Administration

At the meeting of the Council, held June 14-15, 1955, President Demmon was authorized to appoint a special committee "to study and analyze the work performed by the executive office, the organization needed, and the Society's existing personnel policy."

The Committee consisted of Gordon D. Fox, Norman Munster, and Christopher Granger, chairman. Its report was carefully considered by the Council, and the following action taken.

On motion by Mr. Nelson, seconded by Dr. Demeritt, it was voted unanimously to make the report available to the incoming Council taking office on January 1. The incumbent Council believed there would be insufficient time for it to act on the recommendations; moreover, the extent to which certain items could be carried out would depend on the 1956 budget.

Committee on History

In behalf of the Committee on the History of Forestry, E. N. Munns, chairman, presented a special report to the Council. This report, later read at the Society Affairs session held October 17, is published elsewhere in this issue.

On motion by Mr. Coulter, seconded by Dr. Westveld, the Council voted unanimously to accept the report and authorized the president to appoint a committee to seek funds, from sources outside the Society of American Foresters, to finance this worthwhile project.

Election of Fellows

A second progress report on the election of Fellows was submitted by the special Council committee appointed to study election procedure. The committee consists of William J. Brown, S. G. Fontanna, and J. S. Illick, chairman.

Dr. Illick agreed to complete the report, submit copies to the incumbent Council, so that the final report with recommendations may be transmitted to the incoming Council. On motion by Dr. Demeritt, seconded by Mr. Hanson, this procedure was unanimously approved.

Inasmuch as any changes proposed may require amendment of the Constitution as well as of the Bylaws, the report will subsequently be published in the JOURNAL for the information of the membership.

Honorary Member Elected

The Committee on International Relations, to which has been delegated the responsibility of preparing nominations for Honorary Membership for foresters not citizens of the United States or Canada, proposed that Shri C. R. Ranganathan of Delhi, India, be elected to that grade. He is inspector-general of forests of India; chairman of the board of management of *The Indian Forester;* and past president of the Forest Research Institute and Forestry Colleges at Dehra Dun.

On motion by Dean Fontanna, seconded by Mr. Nelson, the Council voted unanimously to elect Shri Ranganathan to the grade of Honorary Member.

Annual Meeting for 1956

Committee assignments for the 1956 annual meeting, to be held in Memphis, October 14-16, were unanimously approved by the Council on motion by Dr. Demeritt, seconded by Dr. Illick.

Appointments have been made as follows:

General chairman: Russell Stadelman, Nickey Brothers, Inc., 2700 Summer Avenue, Memphis 12, Tenn.

Program committee: Chairman, Philip A. Briegleb, Southern Forest Experiment Station, 704 Lowich Building, 2026 St. Charles Avenue, New Orleans 13, La.

SPEAKERS at the Division of Education. Glen R. Durrell, James D. Snodgrass, Walter H. Schaeffer, W. F. McCulloch, Gorden D. Marckworth, Joseph S. Illick, and George B. Hartman.

Committee on Arrangements: Chairman, George C. Romeiser, Southern Hardwood Producers Inc., Sterick Building, Memphis, Tenn.

Additional committee assignments will be announced later.

Plans for a special meeting issue of the JOURNAL OF FORESTRY for October 1956 were approved by the Council. This issue will feature progress in southern forestry.

Conclusion

President Demmon, not himself a candidate for reelection, observed that seven members of the present Council had accepted nominations for reelection. On the assumption that some incumbents would be returned to office, he pointed out that there would doubtless be a certain continuity balancing old members with new.

He thanked the Council for their cooperation during his term as president.

Division of Education

The Division of Education met at 8:00 p.m. Monday night, October 17, in the Rose Bowl of the Multnomah Hotel at Portland. There was an attendance of 200. In the absence of Chairman Archie E. Patterson, the meeting was conducted by W. F. McCulloch, vice chairman.

The first paper "The Pre-forestry Program at the University of Washington" was presented by Walter H. Schaeffer of the University of Washington. With the collaboration of the U.S. Forest Service, the College of Forestry at Washington has made it possible for high school students to obtain forestry employment prior to entering the College of Forestry. One of the advantages is that students obtain a first-hand knowledge of forestry and may decide on a different vocation before committing themselves to a professional forestry career.

Dr. Joseph S. Illick, dean emeritus, State University of New York College of Forestry, presented a careful analysis of the earned doctor degrees in forestry. This will be worthwhile information for future historians in the field of forestry education.

Glen R. Durrell of the Department of Forestry, Oklahoma A & M College, in his paper, "Limiting Enrollments in the Schools of Forestry," presented an interesting breakdown of possible future enrollments. Basing his studies on the ratio of forestry students to high school students in each state, he projected enrollments in 1960, 1965, and 1970. There is great variation in the possible enrollments in various schools in the future but many of them will be faced with exceedingly large numbers of students.

James D. Snodgrass of the Oregon Forest Products Laboratory presented a paper entitled "Handling Large Enrollments Without Lowering Standards of Instruction." He made a plea for maintaining a liberal outlook in curricula. The development of the whole man should not be forgotten in the frantic scramble to provide professional subject materials to increasingly larger numbers of students.

George B. Hartman, Department of Forestry, Iowa State College, spoke on "The Merits of The Generalized Curriculum in Forestry," and Gordon D.

THE PANEL on private forestry. *L.* to *R*, *seated*: Stuart Moir, Chairman W. D. Hagenstein, Earl Porter. *Standing*, E. Stanley Hurd, Arthur W. Nelson, Jr., and Thomas J. Orr, Jr.

Marckworth, College of Forestry, University of Washington, on the subject, "Regionalized Curricula in Forestry, Their Value and Necessity." While it might appear that these two papers were opposed, actually both speakers were in general agreement. They recognized that the general or regional curriculum was influenced in great degree by the presence or absence of local forestry opportunities and requirements.

The nominating committee, Wilbur DeVall, Myron Krueger, and Kenneth P. Davis, chairman, presented the following slate of officers:

Chairman, W. F. McCulloch, Oregon State College, Corvallis.

Vice chairman, David M. Smith, Yale School of Forestry, New Haven, Conn.

Secretary, A. Bigler Crow, Louisiana State University, Baton Rouge.

These candidates were elected by unanimous ballot.

W. F. MCCULLOCH
Vice Chairman

Division of Range Management

The 1955 meeting of the Division of Range Management convened at 8 p.m. Monday, October 17, in the Marine Room of the Multnomah Hotel, Portland, Oregon. Approximately 150-175 persons attended the meeting. Chairman Charles E. Poulton presided.

The major part of the program consisted of an interesting panel discussion on the general topic "Site Classification as We Convert Old Forest Ranges to New."

1. "Principles in the Use of Vegetation to Indicate Grazing Potentials of Forest Lands" by Rexford Daubenmire, Department of Botany, State College of Washington, Pullman, Washington.

2. "Soils-Vegetation Surveys as An Aid in Range Management" by Robert A. Gardner, California Forest and Range Experiment Station, Berkeley, California.

3. "Site Classification as a Basis for Game-Range Management" by Fred W. Johnson, U.S. Forest Service, Missoula, Montana.

4. "Site Classification as a Basis for the Improved Design and Interpretation of Research" by David F. Costello, Pacific Northwest Forest and Range Experiment Station, Portland, Oregon.

5. "Range Management on a Scientific Basis as We Convert from Old Ranges to New" by Gerald D. Pickford, U.S. Forest Service, Steamboat Springs, Colorado.

A short business session followed. Chairman Poulton announced results of the election of new officers of the Division of Range Management for the year 1955-56 just completed. An Election Committee consisting of C. H. Wasser, chairman, Ralph A. Read, and Lincoln Ellison submitted a roster of candidates by mail to members of the Division of Range Management. The following were elected as officers for the coming year:

Chairman, Bert H. Tucker, Delta, Colorado.

Vice chairman, Elbert H. Reid, Fort Collins, Colorado.

Secretary, John T. Cassady, Alexandria, Louisiana.

The meeting was adjourned at 10:45 p.m.

ELBERT H. REID
Secretary

Division of Private Forestry

No report received.

New officers elected as follows:

Chairman, Arthur W. Nelson, The Flintkote Co., Meridan, Miss.

Vice chairman, William C. MacAdam, Champion-International Co., Francestown, N. H.

Secretary, Sulo V. Sihvonen, Crossett Lumber Co., Crossett, Ark.

Division of Silviculture

The 1955 meetings of the Division of Silviculture were held the morning and afternoon of October 18 in the Empire Room of the Multnomah Hotel.

Chairman J. W. Duffield presided over the morning session, which was devoted to contributed papers. Two papers on Alaska were presented; two had to do with protection from insects and disease; and two were concerned with regeneration. The papers were well presented and well received, as attested by the spirited discussion and the full-to-overflowing attendance (seating was provided for some 450).

The chairman turned the afternoon session over to Dr. S. P. Gessel, who conducted a panel discussion of forest soils. Five speakers effectively highlighted the problems, progress, and opportunities in extending knowledge of forest soil-silvicultural relations. A near capacity audience listened to the symposium speakers, but time did

not permit discussion from the floor.

Chairman Duffield conducted a short business meeting with a much smaller group in attendance. The problem of electing officers was the first order of business. The chairman pointed out that the expense involved, and the near impossibility of maintaining a mailing list made mail ballots impractical. Following some discussion the members voted to amend the by-laws to permit election of officers at the anual meetings.

The chairman presented the report of the nominating committee: for vice chairman, W. R. Adams and H. I. Baldwin; for secretary, L. E. Chaiken and J. T. May. Dr. Henry I. Baldwin, research forester, New Hampshire Forestry and Recreation Commission and Professor Leon E. Chaiken, Duke University, Forestry School, were elected. The present vice chairman, Carl Ostrom, Southeastern Forest Experiment Station, automatically succeeds to the chairmanship.

Four committee reports were presented. J. W. Duffield read the report of the Committee on Natural Areas, John F. Shanklin, chairman: "The agreement between the Society, the National Distillers Products Corporation, and Mr. Leo Drey of Missouri providing for the establishment of the Current River Natural Area, an area comprised of virgin white oak, Shannon County, Missouri, was consummated on March 1, 1955. The successful conclusion of this project marks the first natural area which remains in private ownership but which is definitely and legally set aside for natural area purposes. The coordination of research on this area has been assigned to and accepted by Dr. R. H. Westveld, chairman of the Department of Forestry, University of Missouri."

K. P. Davis, chairman of the Forest Practices Committee, reported that the committee will revise its 1954 report (A Decade of Development in Forest Practices, 1940-1950) to include material substantially through 1955 and submit it for publication by the Society. Publication has already been approved by the Council.

S. S. Pauley, chairman of the Committee on Forest Tree Improvement, reported that in the past year the committee has prepared a "Directory of Forest Genetics Research and Education in the United States and Canada." It is available without cost from the Director, Northeastern Forest Experiment Station. The planned "Bibliography for 1954" is now in press. The Committee has also undertaken compilation of a glossary of genetic terms. This project is well along under the leadership of Bruce Zobel, and should be ready in 1957. Pauley reported that the committee at its 1955 meeting gave principal attention to a suggestion that it undertake establishment of a reference service, to be made available to workers in forest tree improvement. A subcommittee was appointed to investigate.

F. G. Wilson submitted the final report of the Committee on Stocking. This committee was orginally part of the Committee on Technical Procedures and Standards discharged in 1953. The Division voted that the report be published as per tentative plans worked out by Chairman Duffield and Editor Meyer.

Meeting was adjourned.

GEORGE R. STAEBLER
Secretary

Division of Public Relations

Albert K. Wiesendanger, vice chairman of the Division of Public Relations, conducted the Division's program at its meeting on October 18, 1955. Principal feature of the two-hour session was a panel discussion on the topic, "Impact of 'Keep Green' Programs on Multiple Use."

Arthur Einarson, leader of the Cooperative Wildlife Research Unit at Oregon State College, Corvallis, emphasized the progress that has been made in preventing forest fires, litterbugging, and vandalism. He also pointed out the continued need for a philosophy of community betterment with a program equally balanced between culture and economic stability.

Mrs. Marion T. Weatherford, chairman of the conservation of natural resources department of the General Federation of Women's Clubs, Arlington, Oregon, continued the theme by discussing "The Family Looks at the Forests." She outlined several projects of the General Federation of Women's Clubs, mentioning in particular the part those organizations played in securing passage of legislation in Oregon which prohibits throwing burning material from automobiles at any time. She said that, "A state of harmony between men and land is the ideal concept of conservation," and added that "the family can play an important part in conserving for future generations the country's natural resources."

E. F. Heacox, chief forester of Weyerhaeuser Timber Company, Tacoma, Washington, reviewed the origin of the "Keep Green" movement and pointed out that its expanding effect has resulted in many benefits in addition to the reduction of the damage of forests due to fire. He said that the highest use of a forest may vary from region to region or from locality to locality but that is was necessary to establish the pre-eminence of uses of a forest so that proper management could be undertaken, not of just one resource but of all in their respective use priorities.

Arthur W. Priaulx, public relations director of the West Coast Lumbermen's Association, said that for too long the "Gate Closed" philosophy has governed the attitude of many foresters toward all users of the forests. He said that foresters need to tell why it is necessary to close certain areas during periods of high fire hazard and to impress upon the public the need for good sportsmanship and consideration for the need to prevent property damage. He said that Oregon's Red Hat Day was a step in the right direction.

In an informal discussion, Mrs. Jensen, chairman of the Save-the-Columbia-Gorge committee, paid tribute to the cooperation of the Bureau of Land Management, Forest Service, National Park Service, and State of Oregon in adjusting land patterns to preserve the scenic beauty of the Columbia River Gorge.

Following several comments concerning the manner in which foresters can be most effective in public relations work, the Division passed a motion requesting the S.A.F. Council and the Council of Forestry School Executives to encourage forestry schools to offer instruction in the techniques and needs of public relations.

Marshall T. Dana, assistant to the president of the United States National Bank, Portland, Oregon, summarized the preceding talks, emphasizing that for a public relations program to be effective it must have the support of the top of the organization. He complimented Albert K. Wiesendanger for his capable and effective direction of the Keep Oregon Green Association.

The Division also passed a motion asking the S.A.F. Council to consider giving emphasis to public relations in the general session of the 1956 meeting of the Society which will be held at Memphis, heart of the southern hardwood region.

Officers elected for the succeeding two-year term were:

Chairman, Charles W. Mattison,
Division of Public Information,

Forest Service, U. S. Department of Agriculture, Washington 25, D. C.

Vice chairman, Fred E. Winch, Jr., extension forester, Cornell University, Ithaca, N. Y.

Secretary, J. Walter Myers, Jr., Forest Farmers Association Cooperative, Atlanta, Ga.

ROBERT D. HOSTETTER
Acting Secretary

Division of Forest Recreation

The Division session was held as scheduled, with Chairman William N. Parke presiding, on Tuesday morning, October 18, 1955. No other officers were able to attend. There were 84 persons who signed the register, and about half again as many persons sat in on parts of the program without signing the register.

The entire program was chosen to carry out the theme of the general meeting, which was "Converting the Old Growth Forest." The papers and speakers were picked to cover the conversion processes in local county, state, and federal areas. We were extremely fortunate in having such outstanding speakers and the manner in which their topics were received by the audience was at least a partial reward to their time and efforts devoted to writing and delivering their papers. The papers and speakers were as follows:

1. "Conversion of Virgin Forests in Parks," by Newton B. Drury, Department of Natural Resources, Sacramento, California.

2. "The Value of Forest Recreation at the State Level" by John Vanderzicht, Washington State Parks and Recreation Commission, Seattle, Washington.

3. "Searching for the End of the Rainbow" by G. E. Cannon, Standard Insurance Company, Portland, Oregon.

4. "Managing Timber Stands for Recreation" by John Sieker, U.S. Forest Service, Washington, D. C. This paper was read by Fred W. Cleator, Washington State Parks Commission, Seattle, Washington, since Mr. Sieker was unable to attend.

Following the delivery of the papers, an election of Division officers for the ensuing year was held. Officers elected are:

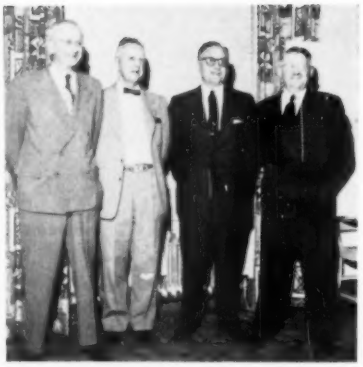
Chairman, Donald P. Duncan, School of Forestry, University of Minnesota, St. Paul 1, Minnesota.

Vice chairman, James P. Gilligan, Department of Forestry, Oklahoma A & M College, Stillwater, Oklahoma.

Secretary, Felix Koziol, forest supervisor, Wasatch National Forest, Salt Lake City, Utah.

No old or new business was taken up at the session, so the meeting adjourned at 11:45 a.m.

WILLIAM N. PARKE
Chairman



ALL the deans of the School of Forest, Range and Wildlife Management, Utah State College: Lyle F. Watts, T. G. Taylor, Paul M. Dunn, and Lewis M. Turner.

Division of Forest Products

The meeting of the Division of Forest Products was held on October 18. Chairman Lincoln A. Mueller presided. In keeping with the record-breaking registration at the general meeting, the attendance at the Forest Products meeting was also at an all-time high of approximately 350.

The program for the meeting was keyed into the general theme of "Converting the Old Growth Forest" and the papers as listed below, were received with a lot of interest. Mr. Ralph Chapman, president of Chapman Manufacturing Company of Corvallis, Oregon, was the first speaker. His subject was, "Utilization of Wood Residue for Hardboard, Coreboard, and Pulp." In his talk he traced the development of the very successful Chapman process and where it stood today.

Robert Seidl of the U.S. Forest Products Laboratory followed Chapman and covered the subject, "Improving Veneer, Plywood, and Lumber with Paper Overlays." Seidl pointed his talk toward what the overlay field offered for a masking surface defects, and thus stepping up the various lumber and plywood grades.

The third paper on "Wyssen Skyline Logging" was presented by E. E. Matson of the Pacific Northwest Forest and Range Experiment Station. In his talk Matson summarized the results of the three Skyline installations in western forests and concluded with the showing of a movie the Wyssen firm has prepared on the unit.

Mr. Ward Mayer of Timber Structures, Inc. of Portland, Oregon was the fourth speaker. His subject was "Growth and Use of Laminated Wood Structure." This very interesting subject covered the growth of the laminating industry and pointed up the present status and future possibilities.

The concluding paper on the program covered the subject of "Hardwood Pulping." The paper was prepared by Mr. Fred O'Neil, head of Pulp and Paper Technology, New York State College of Forestry. Mr. O'Neil was not able to attend the meeting and Dean Hardy L. Shirley presented the paper for him. The paper gave a very excellent account of the development and growth in this very important field and pointed up where the hardwood pulping industry stood today.

In the short business session that followed, the following officers were elected for the coming year:

Chairman, Russell Stadelman, Nickey Bros., Memphis, Tenn.

Vice chairman, Stephen B. Preston, School of Natural Resources, University of Michigan, Ann Arbor, Mich.

Secretary-treasurer, Harry Troxell, Colorado A & M Forestry School, Fort Collins, Colo.

LINCOLN A. MUELLER
Chairman

Division of Forest-Wildlife Management

The meeting of this Division was held on the afternoon of October 19 in the Multnomah Hotel. About 125 men were present. This number, which completely filled the room assigned, is indicative of the growing interest in this phase of forest land management.

In the absence of Chairman Ralph T. King, the vice chairman, Avon Denham, presided. Six excellent papers were delivered. All dealt with various phases of the theme, "The Effects of Logging Old-Growth Timber on Wildlife."

P. W. Schneider, director, Oregon State Game Commission, discussed how removal of climax timber types affect fish habitat, suggested ways of alleviating some of the damaging effects of logging on fish, and called attention to the need for increased research of this subject. E. S. Huestis, director of Forestry and Fish and Game commissioner of Alberta, discussed changes in logging practices in Alberta and its effects on big-game populations, especially elk, deer, and moose. Donald Spencer, U.S. Fish and Wildlife Service, Denver, stated why fire or controlled slash burning does not eliminate small mammals, indicated why completely denuded areas continue to support certain species of rodents. He also called attention to some of the important factors which must be considered in relation to rodent populations in logging old-growth stands, and in the re-establishment of a new forest crop. J. Burton Lauckhart, Washington Department of Game, Seattle, pointed out that the removal of old-growth stands results in a severe ecological shock to plants and animals, and discussed the history of bear damage in certain Pacific Coast forest regions in relation to logging practices. Casey E. Westell, Jr., American Box Board Company, Filer City, Michigan, dealt primarily with the relation of logging practices to deer populations in lower Michigan. Kramer A. Adams, public relations administrator, Weyerhaeuser Timber Company, Portland, called attention to the future increased use of timber lands for hunting, fishing, and other outdoor recreational pursuits. He emphasized that land owners must not only make a sincere effort to solve the many difficulties which result from such public use of forest lands, but must also recognize the advantages to the timber land owner which accrue from public interest in these activities.

Following the presentation of these papers Frank R. Butler, game commissioner of British Columbia, led the discussion. Much interest was shown in the relationship between increasing deer populations and logged-off lands, and methods which might maintain deer herds in balance with their environment. It was pointed out that environmental changes rather than abundance of predators is a major controlling factor in deer populations; and that proper distribution of hunters is important in insuring the taking of an adequate "crop" of animals. The "bear problem" in many western forests also was discussed at greater length. In conclusion, Frank Butler posed the question of continued and increased cooperation between game officials and forest land managers in the solution of many perplexing problems in which both have a vital interest.

No election of officers was held at this meeting of the Division.

C. FRANK BROCKMAN
Secretary

Division of Forest Management

A business meeting of the Division of Forest Management was held at the Multnomah Hotel, Wednesday morning, October 19. Chairman Myron Savage presided and Larry Mays performed the secretarial duties. Also attending were:

R. L. Furniss	Kenneth P. Davis
Earle R. Wilcox	Merle S. Lowden
John F. Wear	J. G. Rowbury
Bob Colwell	Keith Arnold
Royce Cornelius	A. A. Brown
Paul Casamajor	Clive Countryman
Paul Graves	Walter G. Hughes
Fred J. Sandoz	M. B. Bruce
Paul Lauterbach	

Old business was taken up and A. A. Brown made a statement regarding the forest protection group issue. He stated that the question had been resolved by a compromise motion to the effect that the forest protection group can be sufficiently represented on the Forest Management Division by maintaining the Forest Protection Committee.

Chairman Savage appointed a nominating committee composed of Paul Graves, chairman, Dwight Demeritt, and Ralph Marquis. He requested that they present the slate of nominees at the afternoon session of the Division.

The conflict on this year's program between the Economics Division and the Forest Management Division was discussed. It was suggested that in scheduling the program, papers on economics within the Forest Management Division hereafter should not be scheduled at the same time as important economics papers in the Economics Division. Many foresters find it impossible to attend both sessions and they would like to be able to hear papers and discussion of major importance in both these divisions.

The general theme of this year's S.A.F. meeting was "Converting our Old Growth Forests." The papers presented in the Forest Management Division carried out this theme.

The general session of the Division was well attended, and it is estimated there were 440 at the morning session and perhaps an even greater number in the afternoon. Papers were presented in accordance with the propram, with the exception of a short statement by A. A. Brown of the Forest Protection Committee. He talked briefly on the progress of fire protection research. Mr. Brown said that the statement had been made that fire research had progressed further than other forms of forest management research. He felt that fire research still had a long way to go in solving the

RICHARD E. MCARDLE, chief of the Forest Service; Henry Clepper, executive secretary of the Society of American Foresters; and S. H. Spurr, editor of *Forest Science*.

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fire problems in forestry. Experiences in 1955 have well demonstrated this fact. The present conventional methods of fire control are not good enough considering present day values and damage from fire. Further information is needed on—

1. Cloud seeding.
2. Atmospheric influences.
3. Better methods of controlling fires. Fire control has been over-simplified. It has formerly been considered two dimensional. It actually is three dimensional.
4. Control of fires by use of chemicals.
5. Use of electronics—for example, infra-red sensing equipment.
6. Supporting ground forces from air.

Chairman Savage called upon Paul Graves for a report of the nominating committee. He presented the following slate:

Chairman, J. Walter Myers
Vice chairman, Gerald S. Wheeler
Secretary, B. Ernest Allen

No further nominations were received from the floor. A motion was made and seconded that nominations be closed and the chairman cast a unanimous ballot in favor of the above named. Voice ballot was requested and carried. The secretary was instructed to inform new officers of their election.

The Division session ended at 5 p.m.

LARRY MAYS
Secretary

Division of Forest Economics and Policy

No report received.

New officers elected as follows:

Chairman, Albert C. Worrell, School of Forestry, University of Georgia, Athens.

Vice chairman, Arthur S. Todd Jr., Southeastern Forest Experiment Station, Asheville, N. C.

Secretary, Carl H. Stoltenberg, School of Forestry, Duke University, Durham, N. C.

Division of Watershed Management

A. R. Croft, chairman, opened the business meeting at 2 p.m. He passed along the regrets of E. A. Colman, vice chairman, who was unable to attend. The first business was that of a Committee for Study of Hydrologic Training Needs for Men in the Profession of Forestry.

Dr. H. G. Wilm has accepted chairmanship of the Committee. Members appointed include R. E. Dils, Charles Barney, Theodore Plair, E. J. Fjelsted, Bernard Frank, E. A. Colman, Gordon Salmond, and Gordon Ayer. The group attending the Portland meeting approved both the purpose and the selection of members.

Second item of business had to do with Division officer elections. A motion to elect only a new secretary each year and to promote officers through vice chairman to chairman was defeated. A nominating committee with P. G. Haddock as chairman, H. W. Anderson and H. F. Morey, members, was appointed. Their selections will appear on ballots to be mailed to Division members later.

Program Chairman W. E. Bullard was then introduced, and in turn introduced guest speakers E. G. Dunford of the Pacific Northwest Forest and Range Experiment Station, R. A. Work of Soil Conservation Service, and C. M. Everts, Jr. of the Oregon State Board of Health. Dunford spoke

(*Continued on page 70*)

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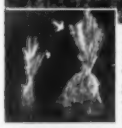

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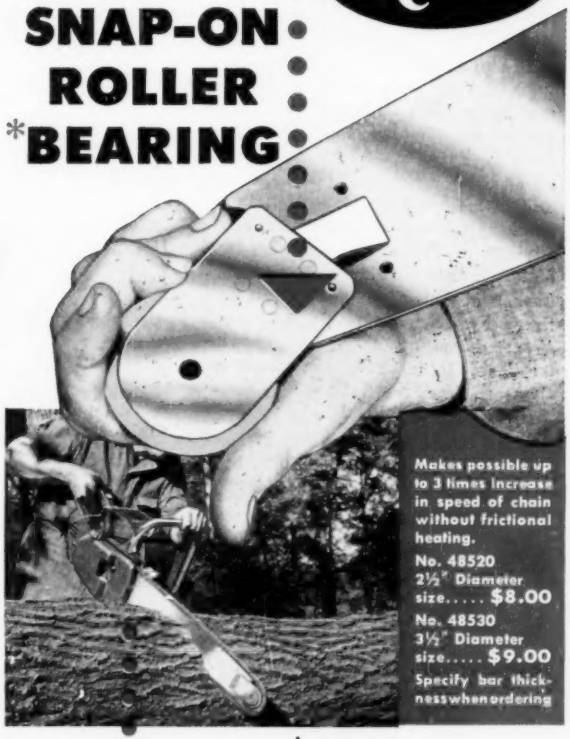

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on watershed management research in the Northwest, Work on snow measurement and management, and Everts on forest management and water quality. The talks were well received and stirred up some interesting comments and discussion. It was suggested that the paper by Everts be submitted for publication in a timber trade journal to extend its message.

The program was then turned over to D. R. Gibney, U. S. Forest Service, moderator for a panel discussion on Minimizing Watershed Disturbance from Logging Operations. He introduced panel members D. E. Colwell of the Cascade Lumber Company, D. R. Hopkins of the Washington State Division of Forestry, Lester Moncrief of U. S. Forest Service, and P. E. Packer of Intermountain Forest and Range Experiment Station. The panel discussed ten questions dealing with the main topic, and then answered questions from the floor.

Registered attendance was 172, but a count of the house midway through the session gave over 200. About thirty latecomers could not even find standing room.

W. E. BULLARD
Secretary

Business Meeting of Council and Section Officers

A business meeting of the Council and Section delegates was held during the evening of October 16 in the Multnomah Hotel, Portland, Ore.

The principal discussion of the conferees centered about the ways and means of reaching an important objective of the Society; namely ". . . to represent, advance, and protect the interests and standards of the profession of forestry. . . ."

All eleven Council members were present together with the following official Section delegates:

Section	*Delegate*
Allegheny	A. L. Bennett, chairman
Appalachian	Thomas Lotti, chairman
Central Rocky Mtn.	Edwin W. Mogren, chairman
Central States	Rudolph A. Grabow, chairman
Columbia River	Dan D. Robinson, chairman
Gulf States	Lloyd Blackwell
Inland Empire	C. Douglas Hole, chairman
Intermountain	A. R. Croft, chairman
Kentucky-Tennessee	Donnell E. O'Brien
New England	Gerald S. Wheeler, chairman
New York	Hardy L. Shirley
Northern California	Kenneth M. MacDonald, chairman
Northern Rocky Mtn.	Paul E. Bruns, secretary
Ozark	Gordon D. Hartrick, chairman
Puget Sound	Royce O. Cornelius, chairman
Southeastern	Lester L. Harris, secretary
Southern California	Carl C. Wilson, chairman
Southwestern	C. K. Spaulding
Upper Mississippi Valley	Z. A. Zasada, chairman
Washington	George Kephart, chairman
Wisconsin-Michigan	Dan E. Bulfer, chairman

Committee Named to Study Indians' Forest Problems

Dan E. Bulfer, chairman of the Wisconsin-Michigan Section of the S.A.F. has announced the appointment of a seven-man committee of foresters to study the forest management problems on the Menominee Indian reservation which have been created by the passage of Public Law 399.

This law terminates all federal control over the Menominee Indian reservation lands December 31, 1958.

Bulfer stated, in establishing the committee, that the Society recognizes the Menominee Indian forest lands as tremendously valuable and unique in the United States. The committee will cooperate with the tribal council and the state committee, headed by Wisconsin Attorney General Vernon Thomson, in studying the problems and suggesting ways and means of perpetuating sound management of the timber resource and the preservation and utilization of the recreational resource values of the area.

Fred G. Wilson of Madison was named as chairman of the committee. Wilson, now retired, was formerly chief of cooperative forestry for the State of Wisconsin.

Other members of the committee are as follows: George L. Banzhaf, consulting forester at Milwaukee; Frank Fixmer, chief forester of the Mosinee Paper Company, Mosinee; James Heinz, chief forester for the Tigerton Lumber Company, Tigerton; John A. Beale, state forestry division, Madison; Merle S. Lowden, assistant regional forester for Region 9 of the U. S. Forest Service at Milwaukee, and Lee Winner, Menominee Indian reservation forester at Keshena.

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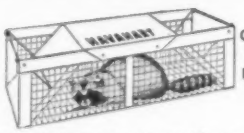

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Membership Applications and Advancements

Proposals for admission, advancement, and reinstatements received in the Society office during the month of November are listed below.

Action on the eligibility of those proposed for membership as listed below will be taken by the Council as of February 1, 1956. Communications from voting members regarding the membership eligibility of these persons should be received in the Society office prior to that date.

Allegheny Section

Junior Grade

Chamberlain E. B., Box 45, Wyoming, Del. Reinstatement.
Lockwood, R. S., Box 323, Buckhannon, W. Va. Reinstatement.
Rex, J. C., Box 39, Camp Hill, Pa. Reinstatement.

Member Grade

Brooks, R. O., R.F.D. #3, Hanover, Pa. (Junior, 1949).
Carts, C. B., 108 Allegheny Ave., Coudersport, Pa. (Junior, 1949).
Fullerton, S. M., 136 Walnut St., Glen Rock, Pa. Reinstatement.
Jones, T. R., Forester, Pa. Dept. Forests & Waters, Harrisburg, Pa. Reinstatement.
Kaufman, H. P., Engineer, Pa. Dept. of Highways, Montoursville, Pa. (Junior, 41R50).
Koch, W. W., Forester, Osmose Wood Preserving Co., Clarks Summit, Pa. (Junior, 1949).
Leach, C. W., R.F.D. 1, Box 40, Trafford, Pa. (Junior, 1948).
Merroth, C. S., Dist. Forester, Pa. Dept. of Forests & Waters, Warren, Pa. (Junior, 1949).
Mulhollen, O. L., Dist. Forester, U.S.F.S., Clarion, Pa. (Junior, 1949).
Stiteler, W. M., Forester, U.S.F.S., Bartow, W. Va. (Junior, 1949).

Appalachian Section

Student Grade

DUKE UNIVERSITY

Bethune, J. E.

Junior Grade

Buckner, E. R., County Forester, N.C. Forest Service, Gastonia, N.C.; Duke, M.F., 1953.
Elliott, R. E., U.S.F.S., Bridgewater, Va. Reinstatement.
Furney, J. E., Box 6, Pinetown, N. C. Reinstatement.
Massingale, A. L., Field Asst., International Paper Co., Wilmington, N. C.; Univ. of Ga., B.S.F., 1950.
Thompson, P. M., Box 2037, Aiken, S. C. Reinstatement.

Central Rocky Mountain Section

Student Grade

COLORADO A & M COLLEGE

Crews, D. L.
Daniels, O. L.
Fullinwider, J. A.
Hoerber, G. F.
James, J. M.
Kaltenbach, R. W.
Lashway, F. G.
Mosier, R. E.
Rate, H. A.
Stocker, D. P.
Yerkes, V. P.

Junior Grade

Hendry, L. E., 334 Jackson St., Deadwood, S. Dak. Reinstatement.

Member Grade

Busch, E. H., Forester, U.S.F.S., Sheridan, Wyo. Reinstatement.

Central States Section

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Bruggenschmidt, J. G.
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Hovarter, F. M.
Hudson, D.
Hupp, J. S.
Marek, K.
Moser, J. G.
Ohlis, R. S.
Reyburn, J. H.
Thompson, J. G.
Weikert, G. D.
Wirsching, R. F.

Junior Grade

Haack, L. E., Asst. Forest Rgr., U.S.F.S., Tell City, Ind. Reinstatement.
Kelsey, F. B., 2624 Merivale Dr., Fort Wayne, Ind. Reinstatement.

Member Grade

Clark, F. G., Forest Research, U.S.F.S., Bedford, Ind. (Junior, 1949).
Freytag, M. A., Farm Forester, 650 S. Tuscarawas Ave., Dover, Ohio (Junior, 1949).
Gibhart, E. J., 1414 Mulford Rd., Columbus, Ohio (Junior, 1949).
Hosner, J. F., Asst. Prof., Agric. Dept., Southern Ill. Univ., Carbondale, Ill. (Junior, 1949).
Kriebel, H. B., Ohio Agric. Expt. Sta., Wooster, Ohio (Junior, 1949).
Lodge, G. R., Farm Forester, Elmwood Dr., Defiance, Ohio (Junior, 1949).
MacAllister, J. G., Consulting Forester, R.F.D. 1, Plymouth, Ind. (Junior, 1949).
Meinzer, P. C., Consulting Forester, R.R. 3, Kokomo, Ind. (Junior, 1948).
Scholten, H., Asst. Ext. Forester, 611 W. Calif. St., Urbana, Ill. (Junior, 1949).
Stephens, E. P., Ohio Agric. Expt. Sta., Wooster, Ohio (Junior, 1949).
Thom, R. H., Farm Forester, Ill. Dept. of Cons., Olney, Ill. (Junior, 1949).
Wandell, W. N., R.R. 3, Urbana, Ill. (Junior, 1949).

Affiliate Grade

Schwarting, W. C., Farm Forester, State of Ill., Chicago, Ill.; Mich. College of Mining & Tech., B.S., (Forestry), 1955.

Columbia River Section

Student Grade

OREGON STATE COLLEGE

Crawford, S. B.
Gossett, L. S.
O'Leary, R. E.

Junior Grade

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Clark, V. L., Box 216, Harbor, Oregon. Reinstatement.
Gartz, J. F., 5110 Robindale Dr., Salem, Ore. Reinstatement.
Griffin, J. B., N. Myrtle Rd., Myrtle Creek, Ore. Reinstatement.
Harris, W. O., 410 N.W. 7th St., Pendleton, Ore. Reinstatement.
Roder, D. C., 12830 N.E. Ore. St., Portland, Ore. Reinstatement.
Wood, J. H., Forest Supv. U.S.F.S., Medford, Ore.; Univ. of Wash., B.S.F., 1933.

Gulf States Section

Student Grade

LOUISIANA STATE UNIVERSITY

Asseff, R. E.
Hamner, J. G.
Holland, P. G.
Keaton, E. E.
Lyon, J. F.
Moore, J. E.
Munday, C. P.
Touliatos, P. D.

Junior Grade

Burkhardt, D. G., Forester, U.S.F.S., Wiggins, Miss.; Pa. State, B.S.F., 1954.
Woodall, J. T., 520 Ogilvie St., Bossier, La.; L.P.I., B.S.F., 1953.

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Irwin, R. J., Area Supv., Lutcher & Moore Lbr. Co., Orange, Texas; Stephen F. Austin State College, B.S., (Forestry), 1949.

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Huber, J. J.
McAlister, R. H.
Preston, P. C.
Stauber, R. L.

Member Grade

Galbraith, M. C., 408 North B Street, Grangeville, Idaho. Reinstatement.

Intermountain Section

Junior Grade

Cooperrider, B. K., Dist. Ranger, U.S.F.S., Challis, Idaho; Colo. A & M. B.S.F., 1949.
Kotok, E. S., Intermountain Forest & Range Expt. Sta., Ogden, Utah. Reinstatement.
Sprague, L., Toiyabe National Forest, Reno, Nev. Reinstatement.

Kentucky-Tennessee Section

Junior Grade

Farmer, K. E., Rt. 1, Newport, Tenn.; Univ. of Mich., B.S.F., 1953.
Meekins, E. H., Dist. Ranger, U.S.F.S., Williamsburg, Ky. Reinstatement.

Affiliate Grade

Brown, P. E., Mammonth Cave Natl. Park, Mammoth Cave, Ky. Reinstatement.

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Student Grade

UNIVERSITY OF MASSACHUSETTS

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Bruso, R. J.
Carson, R. G.
Dane, C. H.
Hudson, N. W.
Long, G. R.
MacInnis, P. M.
Orciuch, P. S.
Selin, A. S.

Junior Grade

Crosby, D., 335 Prospect St., New Haven, Conn. Reinstatement.
Gosse, E. R., Forester, Great Northern Paper Co., Rockwood, Maine; Univ. of Maine, B.S.F., 1951.
Locke, R. W., Service Forester, Maine Forest Service, Caribou, Maine; Univ. of Maine, B.S.F., 1954.
Rideout, L. B., Forester, Pejepscot Paper Co., Bowdainham, Maine; Univ. of Maine, B.S.F., 1940.

Member Grade

Curtis, R. E., 8 Jenness, Rochester, N. H. (Junior, 1949).
Dunwoody, C. B., R.F.D., Hope Valley, R. I. (Junior, 1949).
Erieson, E. H., Box 121, Manchester, Mass. Reinstatement.
Garland, B. B., 42 Johnson Heights, Waterville, Maine. (Junior, 1949).
Gilbert, A. M., Northeastern Forest Expt. Sta., Laconia, N. H. (Junior, 37R53).
Martinsson, P. E., Howard Smith Paper Mills, Montreal, Quebec, Canada. (Junior, 1949).
O'Donnell, J. E., Wright & Pierce, Topsham, Maine. (Junior, 1949).
Patterson, P. K., Great Northern Paper Co., Bangor, Maine. (Junior, 1949).
Quick, H. F., Dept. of Forestry, Univ. of Maine, Orono, Maine. (Junior, 46R52).
Waters, W. E., 335 Prospect St., New Haven, Conn. (Junior, 1949).
Wentz, W. W., U. S. F. S., Manchester Center, Vt. (Junior, 1949).
Winter, G. H., 6 Thomas Street, Bucksport, Maine. (Junior, 44R55).

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Nishimoto, G. Y.
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Member Grade

Armstrong, G. R., Instructor, N. Y. State College of Forestry, Baldwinsville, New York. (Junior, 1949).
Carlaw, J. B., 69 Watchung Ave., Chatham, N. J. (Junior, 1949).
Castor, G. D., Soil Cons. Service, Loudonville, N. Y. (Junior, 1949).
Christensen, E., Penn. Ave., Medford Sta., New York. (Junior, 1949).
Christensen, W. W., 113 Winchell Rd., Syracuse, N. Y. (Junior, 1949).
Cohen, A. J., 233 W. 25th St., New York, N. Y. (Junior, 1949).
Eastment, R. R., Box 241, Speculator, N. Y. (Junior, 1949).
Johnson, F. L., 118 Welton Ave., Jamestown, N. Y. (Junior, 1949).
Johnston, S. J., Consulting Forester, Box 556, Elizabethtown, N. Y. (Junior, 1949).
Labdon, K. B., Forester, N. Y. State Cons. Dept., East Syracuse, N. Y. (Junior, 1949).
Larson, W. T., 326 Price St., Jamestown, N. Y. (Junior, 1949).
Lee, C. N., Soil Cons. Service, Syracuse, N. Y. (Junior, 1949).
Lowe, J. L., Prof., N. Y. State College of Forestry, Syracuse, N. Y. (Junior, 1949).
Meyering, J. R., Instructor, State Univ. of N. Y., Syracuse, N. Y. (Junior, 1949).
Morrison, E. W., Box 210, Saranac Lake, N. Y. (Junior, 1949).
Olcott, F. W., 5 Summit St., Ticonderoga, N. Y. (Junior, 46R55).
Phillips, H. D., Woodlands Dept., St. Regis Paper Co., Deferiet, N. Y. (Junior, 1949).
Remele, K. E., 115 Park Ave., Lowville, N. Y. (Junior, 1949).
Skinner, L. R., 7 Sunset Ave., Lakewood, N. Y. (Junior, 1949).
Strong, D. E., Consulting Forester, Wilmington, N. Y. (Junior, 1949).
Tefft, L. J., Albany St., Oxford, N. Y. (Junior, 1949).
VanScoy, L. F., Carpenter Ave., Mt. Kisco, N. Y. (Junior, 1949).
Wardell, F. S., 1 Mauro Ave., Glens Falls, N. Y. (Junior, 1949).

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Cline, R. A.
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Cothrin, R. L.
Ferrin, D. L.
Fores, R. B.
Hayden, D. W.
Jessen, R. W.
Johnson, D. E.
Knauf, E. R.
Kolkmann, O. J.
Ladd, M. W.
Larson, W. B.
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Vasey, R. B.
Whitacre, J. E.
Winter, E. R.
Zittel, H. F.

Junior Grade

Merritt, R. A., 944 Dennis Dr., Palo Alto, Calif. Reinstatement.

Member Grade

Dole, N. E., 915 S. Street, Redding, Calif. Reinstatement.

Affiliate Grade

Entzminger, R. A., Wood Technologist, Jordan International Co., San Francisco, Calif.; Okla. A & M. B.S., (Forestry), 1953.

Northern Rocky Mountain Section

Student Grade

MONTANA STATE UNIVERSITY

Belcher, F. A.
Coster, J. E.
Garrick, N. L.
Johnson, D. V.
Johnson, R. F.
Ochs, D. E.
Patterson, T. F.
Rundle, R. F.
Smith, L. K.
Venable, R. M.

Member Grade

Cox, G. S., Asst. Prof., Montana State Univ., Missoula, Mont. (Junior, 1949).
Fallman, J. A., Forest Supv., Deerlodge Natl. Forest, Butte, Mont. (Junior, 36R46R55).
Griffith, R. D., Co. Forester, J. Neils Lbr. Co., Libby, Mont. (Junior, 40R50).
Hodge, W. C., Mgr., Tree Farmers Inc., Missoula, Mont. (Junior, 1949).
Sanderson, J. E., Box 303, Libby, Mont. (Junior, 1949).

Ozark Section

Junior Grade

Harry, G. B., Asst. Refuge Mgr., Tishomingo Natl. Wildlife Refuge, Tishomingo, Okla.; Univ. of Mich., B.S.F., 1950.
Moran, H. B., Box 382, Steelville, Mo. Reinstatement.
Syska, A. D., Research Div., Crossett Co., Crossett, Ark. Reinstatement.
Wellberg, E. T., Box 460, Salem, Mo. Reinstatement.

Member Grade

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UNIVERSITY OF WASHINGTON

Allen, G. M.
Battig, B. J.
de Holl, F. G.
Mifflin, J. M.
Schimel, R. D.

Junior Grade

Lauch, P. E., Asst. Forester, U.S. Plywood Corp., Kosmos, Wash.; Univ. of Wash., B.S.F., 1950.

Member Grade

Allen, D. E., Dist. Ranger, U.S.F.S., Cle Elum, Wash. (Junior, 1949).
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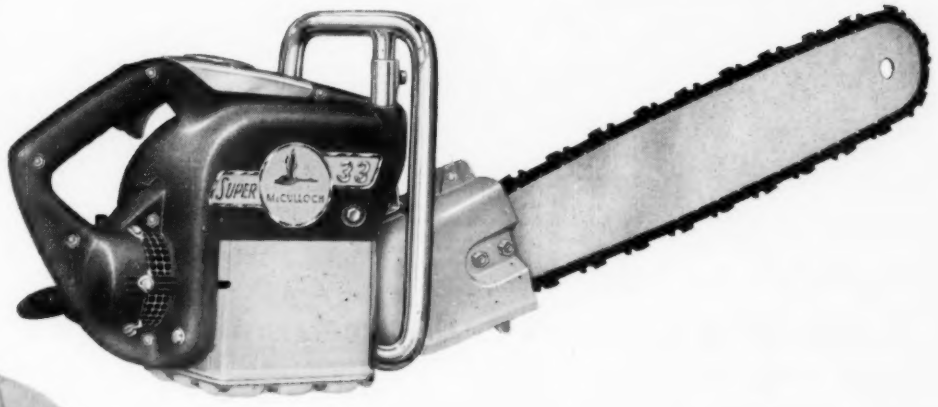

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Borglum, D. W., Naselle, Wash. (Junior, 1949).
Dick, M. R., Land Agent, Weyerhaeuser Tbr. Co., Montesano, Wash. (Junior, 1949).
Hadley, K. W., 510 Bolin Dr., Toppenish, Wash. (Junior, 1949).
Joyer, V. J., Box 757, Sitka, Alaska. Reinstatement.
Seiger, T. W., Quinault, Wash. (Junior, 1949).
Vallad, W. H., Dist. Ranger, U.S.F.S., Mineral, Wash. (Junior, 1949).
Walkley, R. B., Forester, Kootenay Forest Products, Nelson, B. C., Canada. (Junior, 1949).
Williams, W. C., The Lumberman & Pulp & Paper, Seattle, Wash. (Junior, 1949).
Wood, D. D., Tbr. Mgmt. Asst., U.S.F.S., Packwood, Wash. (Junior, 1949).

Affiliate Grade

Gormely, M. W., Industrial & Consulting Forester, 207 W. Hastings St., Vancouver, B.C., Canada; Univ. of B.C., B.S., (Forest Eng.), 1929.
Yates, L. P., Forester, U.S.F.S., Twisp, Wash.; Wash. State, B.S., (Forestry), 1950.

Associate Grade

Krajina, V. J., Associate Prof., Univ. of B.C., Vancouver, B.C., Canada.

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Beasley, R. W., 600 N. Third St., Palatka, Fla. Reinstatement.
Frazer, E. C., Area Forester, Fla. Forest Service, Milton, Fla.; Univ. of Fla., B.S.F., 1950.
Johansen, R. W., Research Forester, Lake City Research Center, Lake City, Fla.; N. C. State, B.S.F., 1951; M.F., 1955.
Martin, C. H., Brunswick Pulp & Paper Co., Brunswick, Ga. Reinstatement.
Scott, T. R., Partner, Pomeroy & McGowin, Mobile, Ala.; L.S.U., B.S.F., 1948.
Scudder, K., 75 McArthur St., Camilla, Ga. Reinstatement.
Strickland, H. W., Planter, Firestone Plantations Co., Harbel, Liberia, West Africa; Univ. of Fla., B.S.F., 1950.
Van Arsdall, W. J., Rt. 1, Box 79, Winter Haven, Fla. Reinstatement.
Wilsky, H. F., St. Regis Paper Co., Fargo, Ga. Reinstatement.

Member Grade

Allan, H. W., Forester, Fla. Forest Service, Panama City, Fla. (Junior, 1949).
Ambrosen, D. R., Piedmont Wildlife Refuge, Round Oak, Ga. (Junior, 1949).
Amsler, F. P., Forester, St. Marys Kraft Corp., St. Marys, Ga. (Junior, 1949).
Anderson, S. L., Forester, Armstrong Cork Co., Macon, Ga. (Junior, 1949).
Attaway, C. F., 2012 Lucas Drive, Montgomery, Ala. (Junior, 1949).
Barnhill, W. R., Consulting Forester, 1113 Gillespie Ave., Albany, Ga. (Junior, 1945).
Beckwith, S. L., Asst. Prof., Univ. of Fla., Gainesville, Fla. (Junior, 38R50).
Bethea, J. M., Asst. Forester, Fla. Forest Service, Tallahassee, Fla. (Junior, 1948).
Bradley, J. M., Southern Tbr. Mgmt. Service, Birmingham, Ala. (Junior, 1949).
Brett, F., Forester, Buckeye Cellulose Corp., Perry, Fla. (Junior, 1949).
Browne, T. H., Woodland Conservationist, Soil Cons. Service, Wrightsville, Ga. (Junior, 36R55).
Carr, C. D., Forest Eng., International Paper Co., Panama City, Fla. (Junior, 1949).
Colson, J. H., Forester, Ga. Kraft Co., Macon, Ga. (Junior, 1949).
Colville, W., Economist, St. Regis Paper Co. Jacksonville Fla. (Junior, 1949).
Courtenay, J. H., Forester, U.S.F.S., Centerville, Ala. (Junior, 1949).
Cowan, W. F., Dist. I & E Forester, Fla. Forest Service, Tampa, Fla. (Junior, 1949).
Davenport, E. A., Cons. Forester, Union Bag & Paper Corp., Savannah, Ga. (Junior, 1949).
Davis, R. E., 454 Fairway Hill Dr., Atlanta, Ga. (Junior, 1948).
Dickinson, J. E., Scaling-Coordinator, International Paper Co., Panama City, Fla. (Junior, 1949).
Dixon, R. D., P. O. Box 168, Griffin, Ga. (Junior, 1949).
Dowdy, F., Dist. Forester, International Paper Co., Springhill, Ala. (Junior, 1949).
Duff, D. G., Box 82, Fulton, Ala. (Junior, 1948).
Fisher, G. W., Forester, Bell Lbr. Co., Lakeland, Fla. (Junior, 1949).
Foster, H. J., International Paper Co., Waycross, Ga. (Junior, 1949).
Harper, R. S., I & E Forester, Fla. Forest Service, Tallahassee, Fla. (Junior, 1949).
Herndon, T. G., Asst. Prof., Univ. of Fla., Gainesville, Fla. (Junior, 1949).
Hill, J. H., Consulting Forester, 1837 Hillview, Sarasota, Fla. (Junior, 1949).
Hitchcock, H. C., Foley, Ala. (Junior, 39R46R55).
Hyde, R. S., St. Regis Paper Co., Pensacola, Fla. (Junior, 1949).
Kilbourne, E. I., Estate Consuelo, San Pedro de Macoris, Dominican Republic. (Junior, 1936).
Koger, M. S., 1994 Higdon St., Augusta, Ga. (Junior, 1948).
Larson, D. E., U.S.F.S., Atlanta, Ga. (Junior, 1948).
Lightsey, W. F., Forester, St. Regis Paper Co., Jacksonville, Fla. (Junior, 1949).
Lundy, L. L., Chief, Supplies & Services, Ga. Forestry Comm., Macon, Ga. (Junior 1949).
McCullough, J. M., Management Asst., Ala. Div. of Forestry, Montgomery, Ala. (Junior, 1949).
McIver, J. E., Dist. Forester, International Paper Co., Eulonia, Ga. (Junior, 1948).
McNasser, K. W., U.S.F.S., Atlanta, Ga. Reinstatement.
Moses, P. J., Gen. Mgr., Woodland Managers, Lake City, Fla. (Junior, 1949).
Moyer, H. R., Sessoms Co., Homerville, Ga. (Junior, 1949).
O'Barr, M. M., Forest Eng., Ga. Forestry Comm., Macon, Ga. (Junior, 1949).
O'Leary, J. D., Forester, International Paper Co., Hazlehurst, Ga. (Junior, 1949).
Peeples, H. C., Dist. Forester, Fla. Forest Service, Lakeland, Fla. (Junior, 1949).
Perryman, J. D., Forester, Bunnell Tbr. Co., Bunnell, Fla. (Junior, 1949).
Rawls, M. G., Woodlands Mgr., St. Regis Paper Co., Jacksonville, Fla. (Junior, 42R50).
Reimer, T., Box 395, Albany, Ga. (Junior, 1949).
Reines, M., Asst. Prof., Univ. of Ga., Athens, Ga. (Junior, 44R55).
Richards, D. B., Forestry Dept., Ala. Polytechnic Inst., Auburn, Ala. (Junior, 1949).
Roberts, J. R., 57 Bellwood Circle, Northport Ala. (Junior, 1949).
Rodgers, C. A., Forester, Rome Kraft Co., Rome, Ga. (Junior, 1948).
Schulter, E. A., Forester, Estes Tbr. Co., Pensacola, Fla. (Junior, 1949).
Scruggs, J. D., Box 121, Madison, Fla. (Junior, 1949).
Shoptaw, G. C., Mgr. Wood Procurement, Union Bag & Paper Co., Savannah, Ga. (Junior, 1949).
Shoub, J. L., Dist. Forester, International Paper Co., Hazlehurst, Ga. (Junior, 1949).
Sisley, J. F., Mgr. Wood Procurement, Ga. Kraft Co., Macon, Ga. (Junior, 1949).
Smith, L. F., Rt. 2, Box 70-B, DeFuniak Springs, Fla. (Junior, 1949).
Smith, L. J., U.S.F.S., Crawfordsville, Fla. (Junior, 1949).
Smoak, G. W., Box 1578, Albany, Ga. (Junior, 1949).
Snowden, J. B., Forester, American Sumatra Tobacco Co., Quincy, Fla. (Junior, 1949).
Sonnen, D. T., Dist. Forester, Interstate Land & Dev. Co., Forsyth, Ga. (Junior, 1949).
Spector, A. H., U.S.F.S., Atlanta, Ga. (Junior, 1949).
Sumner, E. A., Box 303, Wewahitchka, Fla. (Junior, 1949).
Ward, E. H., Dist. Forester, Ala. Dept. of Forestry, Ozark, Ala. (Junior, 1948).
Willingham, J. W., Asst. Prof. Univ. of Fla., Gainesville, Fla. (Junior, 1949).
Wright, J. D., Box 300, Bay Minette, Ala. (Junior, 1949).
Youmans, J. A., Augusta Hardwood Co., Augusta, Ga. (Junior, 1948).

Affiliate Grade

McMahon, J. H., Farm Forester, Fla. Forest Service, Crestview, Fla.; Okla. A & M, B.S., (Forestry), 1950.

Southwestern Section

Junior Grade

Bennett, R. K., Heber Ranger Sta., Overgaard, Ariz. Reinstatement.

Member Grade

Bade, G. H., Asst. Forest Supv., U.S.F.S., Williams, Arizona (Junior, 1949).
Bowman, E. E., Box 394, Ft. Defiance, Ariz. (Junior, 1949).
Collins, E. H., Dist. Ranger, U.S.F.S., Magdalena, N. Mex. (Junior, 1949).
Eastman, B. H., 1706 Anderson Pl., Albuquerque, N. Mex. Reinstatement.
Johnson, N. E., Forester, Tbr. Mgmt., Coconino Natl. Forest, Flagstaff, Ariz. (Junior, 1949).
Lewis, H. G., 5510 E. 20th St., Tucson, Ariz. (Junior, 1949).

(Continued on page 77)

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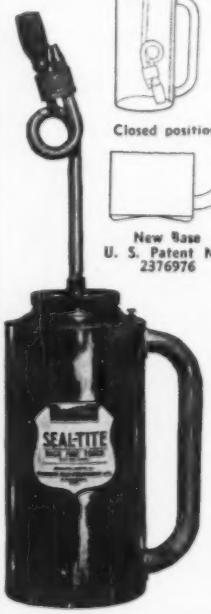

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Lewis, J. G., Supt., Saguaro Natl. Monument, Tucson, Ariz. (Junior, 1949).
Mlynek, W., Forester, Duke City Lbr. Co., Albuquerque, N. Mex. (Junior, 1949).
Pattison, L. W. Asst. Supv., U.S.F.S., Flagstaff, Ariz. (Junior, 1949).
Rehfeldt, R. F., Whiteriver, Ariz. (Junior, 1949).
Shields, C. A., Dist. Ranger, U.S.F.S., Penasco, N. Mex. (Junior, 1949).

Upper-Mississippi Valley Section

Student Grade

IOWA STATE COLLEGE
Ecker, E. F.

UNIVERSITY OF MINNESOTA
Schoberg, F. P. Solberg, C. T.

Junior Grade

Haff, A. S., Sugar Loaf Landing, Little Marais, Minn. Reinstatement.
Nygaard, H. K., 6128 Brookview Ave., Minneapolis, Minn. Reinstatement.
Taube, A. H., Rt. 3, Davenport, Iowa. Reinstatement.
White, J. W., U.S.F.S., Duluth, Minn. Reinstatement.

Washington Section

Junior Grade

Husman, D. L., 2745 Bradley Circle, Falls Church, Va. Reinstatement.
Mendel, J. J., U.S.F.S., Washington, D. C. Reinstatement.

Member Grade

Bear, D. H., 1619 Poplar Dr., Falls Church, Va. (Junior, 1949).
Casamajor, P., 9309 Linden Ave., Bethesda, Md. (Junior, 41R50).
Furlow, E. P., 810 Gouthier Rd., Falls Church Va. (Junior, 1949).
Merrick, G. D., U.S.F.S., Washington, D. C. (Junior, 1949).
Miskovsky, M. C., 3317 Runnymede Pl. N.W., Washington, D. C. (Junior, 1949).
Mosebrook, H. S., 1615 H St., N.W., Washington, D. C. Reinstatement.
Shaw, S. P., Fort Washington, Washington, D. C. (Junior, 1949).
Smith, J. M., 5016 Cushing Dr., Kensington Md. (Junior, 1949).

Wisconsin-Michigan Section

Student Grade

MICHIGAN STATE UNIVERSITY

Beuter, J. H. Mason, R. H.
Fenwick, D. P. Mitschelen, G. E.
Larsen, R. J. Vorce, R. W.

UNIVERSITY OF MICHIGAN

Bach, H. A. R. Marks, R. W.
Erlanger, J. J. Paulu, G. F.
Heikkenen, E. A. Taft, K. A.
Jones, H. B. Walter, R. J.

Junior Grade

Ayling, A. T., Asst. Forester, Dept. of Parks & Recreation, Detroit, Mich.; Mich. State, B.S.F., 1950.
Buerge, J. W., Staff Forester, Dept. of Cons., Lansing, Mich.; Mich. State, B.S.F., 1949.
Foster, C. H. W., 1310 Arbor View Blvd., Ann Arbor, Mich.; Univ. of Mich., B.S.F., 1953.
Wallin, C. E., Solon Springs, Wis. Reinstatement.

Affiliate Grade

Barden, L. W., Asst. Dist. Forester, Houghton Lake State Forest, The Heights, Mich.; Mich. College of Mining & Tech., B.S., (Forestry), 1949.

Associate Grade

Brown, E. C., Owner, Emerson Brown Co., Birmingham, Mich.; Mich. State, B.S., (Landscape Architecture), 1922.

Ernest G. Dudley (1880-1955)

Ernest Griswold Dudley, 75 of Palo Alto, Calif. died July 13.

Born August 25, 1880 in Guilford, Conn. he attended Stanford University and Yale School of Forestry.

After eight years in the U. S. Forest Service, he became, in 1917, assistant professor of forest extension in the New York State College of Forestry where he served for ten years.

Returning to California, he engaged in ranching, but retained his interest in forestry. He was a member of the California State Forestry Commission during 1931-1936.

W. B. Osborne, Jr. (1884-1955)

William Bushnell Osborne, 70, retired U. S. Forest Service officer, died at his home in Portland, Ore., October 28.

Born November 20, 1884 in Rochester, N. Y. he received the A. B. degree from Williams College and the M. F. from Yale in 1909.

Entering the U. S. Forest Service that year he was assigned to the Pacific Northwest region, rising from forest assistant to deputy supervisor after which he was assigned as a fire control specialist in the regional office.

He was the inventor of the Osborne fire finder, an instrument used throughout the world for locating forest fires from lookout towers. A recognized authority on techniques of fire control he developed methods for applying weather data to fire suppression, standard mess and ration kits, the use of high lookouts, and numerous other innovations.

More recently he invented the Osborne photo recording transit for taking panoramic photographs precisely graduated as to azimuth and vertical angles.

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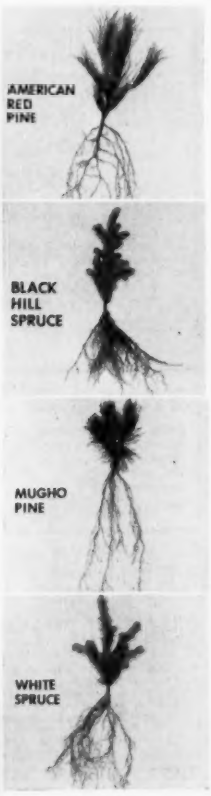

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Forestry News

Two Foresters Attend Rome F.A.O. Meeting

U. S. Forest Service Chief R. E. McArdle and Tom Gill were members of a 24-man official U.S. delegation to the Eighth Session of the Conference of the Food and Agriculture Organization (F.A.O.) of the U. N. during November in Rome, Italy. The delegation was headed by Assistant Secretary of Agriculture Earl L. Butz and Administrative Assistant Secretary Ralph S. Roberts. Mr. Gill represented the Society of American Foresters.

Council of Forestry School Executives Elects Officers

At the meeting of the Council of Forestry School Executives, held in Portland, Ore., October 15, 1955, the following officers were elected:

Chairman, Ernest Wohletz, School of Forestry, University of Idaho, Moscow.

Secretary, R. H. Westveld, Department of Forestry, University of Missouri, Columbia.

Spruce Budworm Spraying Unnecessary Next Year

The Pacific Northwest Forest Pest Action Committee at a meeting in Portland, Ore., in October recommended that no spraying for spruce budworm be carried out in 1956. With infestation still present on 543,000 acres, only 40,000 are judged to be heavily infested. A seven-year program of aerial spraying, undertaken by private timber owners and federal and state agencies, has reduced heavy infestations from a 1949 total of 2,760,000 acres. The committee reported that natural control factors are now able to keep the budworm in check.

Ernest L. Kolbe, forester for the Western Pine Association and chairman of the committee for the past seven years, was re-elected chairman for his eighth year.

Spraying for the Tussock moth on 9,100 acres in northeastern Washington was recommended. Woolly aphid was reported to have infested 258,880 acres in Washington and 35,680 acres in Oregon, attacking chiefly, white, Pacific silver, and subalpine firs.

Australian Pasture and Research Tour Being Planned

The Division of Plant Industry, Commonwealth Scientific and Industrial Research Organization, of Australia is planning an organized tour covering the eastern pastoral areas of Australia and research centers within them following the Seventh International Grassland Congress, which is to be held in New Zealand in November 1956. If sufficient interest is shown, the tour would last 10 or 11 days and include such important pasture areas as those near Brisbane, Armidale, Sydney, Canberra, Deniliquin, and Melbourne. The cost including accommodations will be about 35 pounds Australian (about $100) although transportation costs may be subsidized, in which event the cost might be reduced to 20 pounds ($56). Anyone interested should write to:

Mr. R. M. Moore
Division of Plant Industry
P. O. Box 109 City
Canberra A.C.T.
Australia

An Economic Survey of Sport Hunting and Fishing in the United States

Starting in January, 1956, the U. S. Fish and Wildlife Service will make a national survey of hunting and fishing, to determine the importance of those recreations in the country's economy. The survey organization of Crossley, S-D Surveys, Inc., will conduct personal interviews of hunters and fishermen throughout the country, and statistics gathered will provide a nationwide measure of hunting and fishing, in terms of number of persons taking part and amount of time and money spent.

Conservation agencies—private, state, and federal—await with particular interest the results of this national analysis, and many segments of American business are also interested, for hunting and fishing have been estimated as a more than 5 billion dollar a year industry. In the past, figures on the number of hunters and fishermen have included only those who bought licenses. In many places specified persons are exempt from license requirements.

The survey will report on hunting and fishing during the calendar year 1955. The primary objectives are to determine (1) the number of persons, by age, sex, and licensing, who hunted and/or fished for sport, (2) the amount of time spent on these sports by each hunter or fisherman, and (3) the amount of money spent by each (including all expenditures for items connected directly with hunting or fishing).

Data collected in this survey will help to answer questions that have faced legislators and fish and game management authorities. They will also give businessmen the answers to some questions concerning hunting and fishing as an industry.

Public

Forest Service Personnel Changes

Bert H. Tucker recently succeeded Basil K. Crane as supervisor of the Grand Mesa-Uncompahgre National Forest headquartered at Delta, Colorado, Regional Forester Donald E. Clark announced recently.

Prior to his present assignment Tucker was assistant to the assistant regional forester in charge of range and wildlife management, located in Denver.

Mr. Crane was promoted from supervisor of the Grand Mesa-Uncompahgre to assistant regional forester in charge of range and wildlife management in Denver. He succeeded Fred H. Kennedy who was promoted to regional forester of the Southwest Region of the Forest Service at Albuquerque, New Mexico.

Veteran Forester Retires

The retirement of I. V. Anderson after 35 years of service, was announced in November by Reed W. Bailey, director of the Intermountain Forest and Range Experiment Station, Ogden, Utah. Mr. Anderson at the time of his retirement was chief of the station's forest utilization service and

I. V. ANDERSON

is widely known for his work in the wood technology and timber utilization fields.

A graduate of Michigan State College in June 1920, Anderson joined the Forest Service later that same year as ranger on the Cabinet National Forest in Montana. He has served as forest examiner, assistant forest supervisor, specialist in forest products research, regional chief of wildlife management, and most recently as liaison between the Forest Service's Forest Products Laboratory in Madison, Wis., and the timber industries of the Rocky Mountains. During World War II he worked with the War Production Board in facilitating timber production. He has written numerous publications on methods of logging, timber utilization problems, and related subjects.

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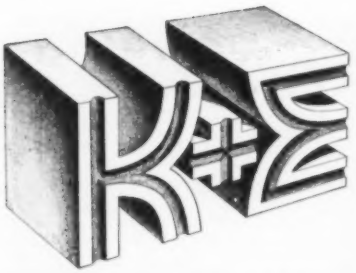

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KENNETH B. POMEROY

Pomeroy Heads Division at Northeast Station

Kenneth B. Pomeroy has been appointed chief of the Division of Forest Management Research in the Northeastern Forest Experiment Station, Upper Darby, Pennsylvania, according to an announcement by Ralph W. Marquis, director.

A member of the U. S. Forest Service since 1933, Pomeroy served as ranger and timber management assistant on Wisconsin and Michigan National Forests, as plantation manager on the Guayule Rubber Project in California, assistant area forester of the Timber Production War Project in Kentucky, and silviculturist of the Southeastern Forest Experiment Station in Virginia. Since 1950 he has been leader of the Lake City, Florida, Research Center where studies are being conducted in gum naval stores production, breeding and propagation of high-gum-yielding pines, management of slash pine, regeneration of sand pine and south Florida slash pine, control of black turpentine beetles, and management of the native range. Pomeroy holds B.S. and M.F. degrees from Michigan State and Duke University.

Massachusetts To Inventory State-Owned Resources

Under a bill passed by the Massachusetts General Court, the State Department of Natural Resources will undertake an inventory of the forests and other natural resources on 170,000 acres of state-owned lands, including acreages, timber volumes, growth rates, species, and other data. Following the inventory the department will prepare a long-range plan for appropriate use of the land with the objective of assuring maximum benefits therefrom.

In a companion measure, the Board of Natural Resources and the trustees of the state university were authorized to study the facilities, programs, and work of all state agencies concerned with natural resources for the purpose of coordination and increased effectiveness.

News of Foreign Assignments

Willard F. Bond, assistant forest supervisor of the Santa Fe National Forest, N. Mex., left in October for a two-year technical assistance assignment with the International Cooperation Administration as forestry adviser to the I.C.A. Mission in Tripoli, Libya. He succeeds Lynn E. Hatch, who returned from a similar assignment earlier this year. Bond will assist in developing and directing the Libyan forestry program in the Province of Tripolitania.

H. E. Schwan recently visited the United States from Baghdad, on home leave after more than two years overseas. Schwan is range management specialist with the I.C.A. Mission in Iraq and adviser on range management matters to the Iraq Ministry of Agriculture. He returned to Baghdad in November for a second tour of duty.

States Receive $19 Million National Forest Payments

Forty states and two territories in which national forests are located have received $19,381,154.57 in lieu of taxes, based on 25 percent of national forest receipts for the fiscal year ended June 30, 1955. The money is earmarked for the benefit of public schools and public roads in the counties containing national forests. Payments ranged from a low of $30.54 for North Dakota to $6,104,818.03 for Oregon.

Schroeder Named Oregon Assistant State Forester

E. J. Schroeder, district warden in charge of the Northwest Oregon State Forest District, headquartered at Forest Grove, has been promoted to the position of assistant state forester in charge of the recently created State Forests Division. He has been succeeded as district warden at Forest Grove by Walter F. Sargent, rehabili-

(*Continued on page* 83)

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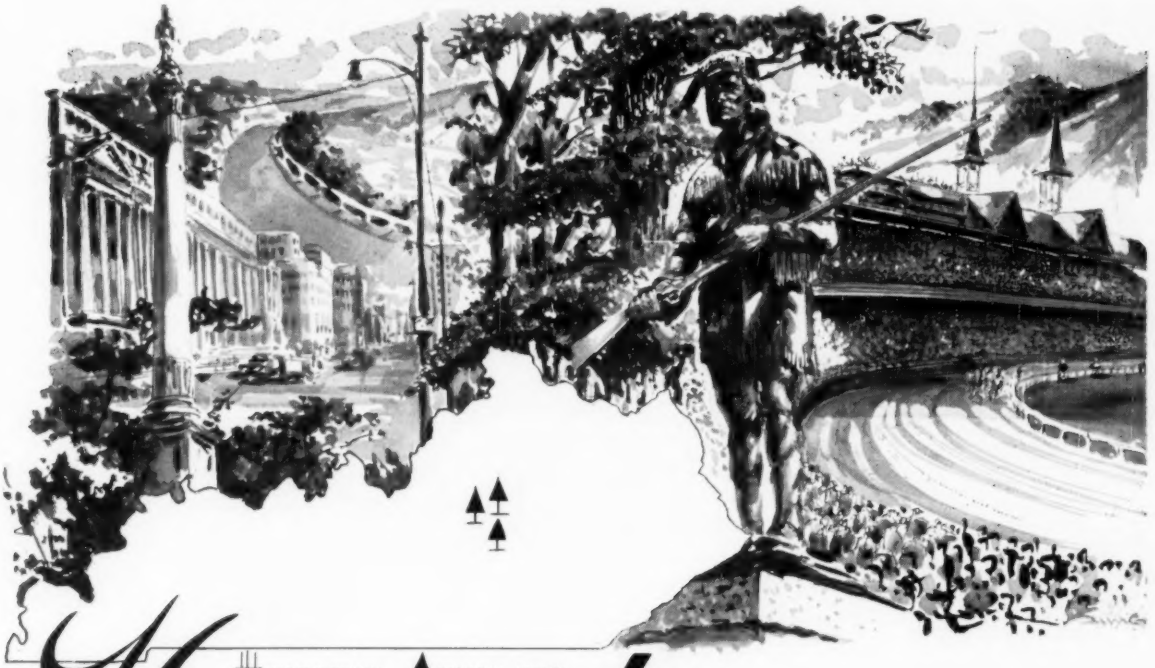

Kentucky

Land of Hardwoods

Long before Kentucky became famous for beautiful women, fast horses, and fine whiskey, she was known far and wide for the magnificence of her hardwood forests. Today, after 180 years of settlement, logging and land clearing, Kentucky has 11½ million acres of forested land (45% of the state's land surface).

Every county has woodland. About 92% of the volume consists of such fine hardwoods as white oak, red oak, tulip, black walnut, maple, ash and beech. The softwood volume contains such commercial species as hemlock, cypress, white pine, shortleaf pine, Virginia pine and red cedar.

Kentucky has enough forest land to provide four acres of trees for every man, woman and child in the state.

These timberlands — 94% in private ownership—supply stumpage for nearly 2,000 mills and industries which produce more than 500 million board feet of lumber, cross ties, and veneer each year. In addition, millions of cubic feet are used for mine timbers, fence posts, fuelwood and pulpwood.

Three state forests, totaling more than 31,000 acres, are operated as demonstrations of sound forestry. The Cumberland National Forest, which contains nearly ½ million acres of timberland, lies on the western edge of Kentucky's eastern mountains.

The job of protecting, developing and perpetuating state and privately owned forest lands is the responsibility of the Division of Forestry of the State Department of Conservation and is handled in cooperation with the U. S. Forest Service. Cooperation of these agencies with industry, landowners and with such other agencies as the Extension Division of The College of Agriculture of The University of Kentucky, The U. S. Soil Conservation Service and the Tennessee Valley Authority insures the development and perpetuation of Kentucky's forests for the present and the future.

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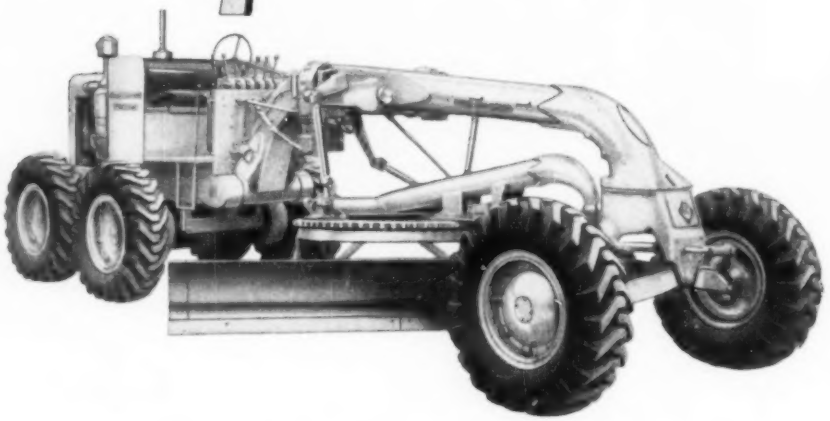

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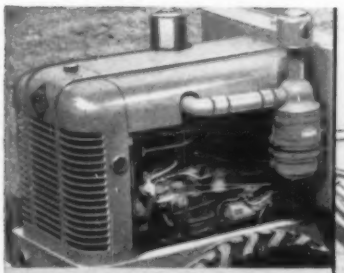
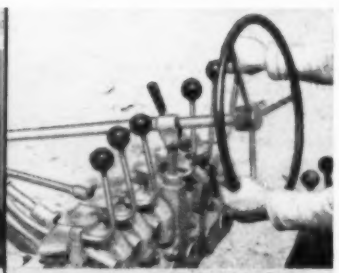


Powerful new Allis-Chalmers diesel featuring exclusive "follow-through" combustion for smooth performance, clean combustion, extra long life.



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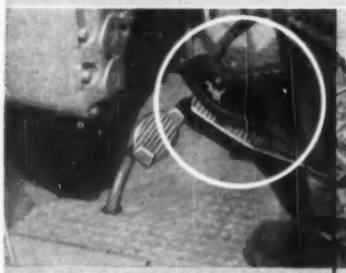

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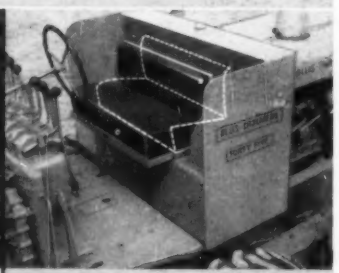

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CONSTRUCTION MACHINERY DIVISION, MILWAUKEE 1, WISCONSIN

ALLIS-CHALMERS

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Sargent also received his degree from Oregon State, graduating in 1946 after serving over four years in the Army in World War II.

F. D. IRVING

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Pennsylvania to Hold Grading Short Course

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For heavy, stony soils, steep hillsides. Heeling wheels adjustable to line up with tree row on hillsides. Widely used by northeastern Christmas tree growers.

Lake States

Same features as "Standard" but has scalping middlebuster between coulter and trencher.

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Selling at only $245 complete with timer, 18" Coulter, puncture-proof tires, and heavy cast planting shoe this is a planter buy!

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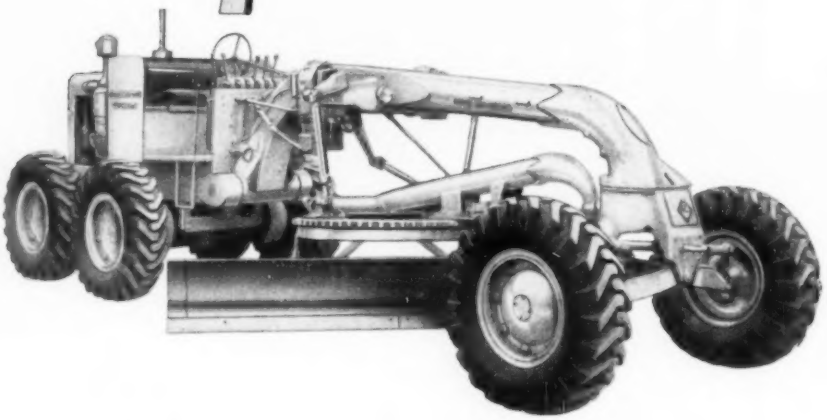

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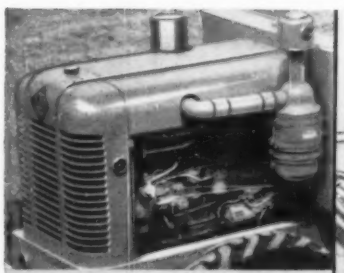

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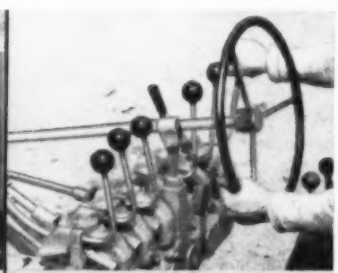

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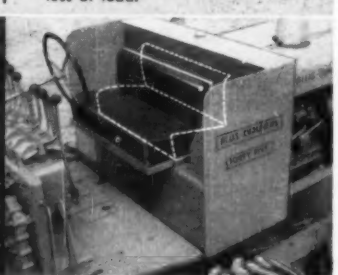

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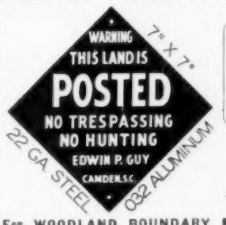

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engage in forest spraying. The instruction was limited to pilots holding commercial certificates. Considerable emphasis was given to technical factors affecting flight performance of planes (load, pressure altitude, temperature, etc.) and included 30 hours of flight instruction in various phases of the subjects covered in the classroom.

Training of this type is expected to result in higher quality of applicator workmanship, lower pilot accident rates, and fewer worries for those who plan and supervise operator jobs. Nine pilots from nine different states were in attendance.

Industry and Private

N.L.M.A. Holds Annual Meeting

Directors of the National Lumber Manufacturers Association, at an annual meeting, Nov. 14-16 in Washington, D. C., elected Lawrence D. Kellogg, Alexandria, La., as N.L.M.A. president for 1956 and moved to step up the promotion of lumber and wood products in the building fields.

Kellogg, president of the L. D. Kellogg Lumber Company, succeeds Judd Greenman, Vernonia, Ore., who was named N.L.M.A. board chairman. Greenman recently retired as general manager of the Vernonia Division of the Long-Bell Lumber Company.

Walter M. Leuthold, president of the Deer Park Pine Industries, Deer Park, Wash., was elected first vice president, succeeding Kellogg.

Elected regional vice presidents of N.L.M.A. are: A. L. Helmer, president of the Western Pine Association; N. B. Giustina, president of the West Coast Lumbermen's Association; Arthur Temple, Jr., president of the Southern Pine Association; and Henry W. Jones, vice president of Southern Hardwood Producers, Inc.

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Specialist in Continuous Forest Inventory with IBM
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Reforestation Arboriculture
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N.L.M.A. directors voted funds to expand the association's technical assistance to builders, architects, and engineers. They also voted funds for the association to keep up to date on research activities of the forest products industries and to conduct preliminary investigations of promising research "leads."

In another action, the lumbermen voted to continue the association's annual scholarship program. The program provides for the award of $500 scholarships each year to four outstanding forestry school students as well as ten weeks of instruction in wood technology and utilization at the laboratory of the Timber Engineering Company, research affiliate of N.L.M.A.

A highlight of the meeting was the display of special exhibits designed to encourage an expansion of industry research activities.

The exhibits, sponsored by the Timber Engineering Company, suggested new and improved wood products for development through research, largely using waste materials. Particular interest was shown in the demonstration of new equipment for ultrasonic testing of wood which show up imperfections in the wood whether visible or hidden.

TECO research workers explained that this technique could bring about automatic stress grading of lumber and may also have practical application in measuring the smoothness of furniture surfaces and testing the glue lines in plywood and laminated timbers.

A.F.P.I. Officers Announced

The election of W. J. Bailey, West Virginia Pulp and Paper Co., New York, as president of American Forest Products Industries, Inc., was announced recently.

He succeeds Leonard G. Carpenter, McCloud River Lumber Co., Minneapolis, Minn.

G. W. E. Nicholson, Union Bag and Paper Corp., New York, and William Swindells, Willamette Valley Lumber Co., Portland, were named vice presidents. Paul Koenig, P. H. Glatfelter Co., Spring Grove, Pa., was elected treasurer.

Elected as trustees were J. R. Kimberly, Kimberly-Clark Corp., Neenah, Wis.; R. E. Wortham, Jr., Southland Paper Mills, Inc., Lufkin, Tex.; D. S. Denman, Crown Zellerbach Corp., San Francisco; G. W. E. Nicholson, New York; Sydney Ferguson, The Mead Corp., New York; William Hilton, Great Northern Paper Co., Bangor, Me.; Clyde B. Morgan, Rayonier Incorporated, New York; E. B. Birmingham, Hammond Lumber Co., San Francisco; Leonard G. Carpenter, Minneapolis.

Charles A. Gillett was reappointed managing director.

Gaylord Presents Leased Forests to Schools

During November Gaylord Container Corporation, through its Forestry Department presented a 10 year renewable lease on 20 acres of developed forest land to each of 11 high schools of Livingston Parish, Louisiana. The forests are to be known as the High School Community Forests and are to be administered and managed by a school forest committee. The forests are to serve as an outdoor class room and laboratory to teach and develop

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tree farming practices and techniques. Seventy-five percent of the gross revenue from the forests will accrue to the school to be used to promote club and school activities and furnish scholarships to eligible and deserving students. The twenty-five percent retained by the corporation will be used to pay ad valorum tax on the land and the severance tax on the forest products removed from the forests.

Foundation for Resource Management Outlines Program

The Foundation for American Resource Management, with offices in the Monadnock Building, San Francisco, is a nonprofit California corporation set up to do educational and research work with natural resources. The first research work will be conducted in the field of forestry, stressing the management of forests in such a manner as to assure continual productivity. The structure is broad and elastic to permit studying any renewable resources and to show the relationship and interdependence of these resources in a modern civilized world.

The funds for the research work of the Foundation have been assured over a period of years and the policies and management of the Foundation are in the hands of a board of trustees. The members of the board of trustees are: Professor Emanuel Fritz, forestry consultant; E. O. Holter, Jr., Sage Lands, Inc.; Russell Johnson, Union Lumber Company; George Merck, Merck Chemical Company; C. F. Rehnborg, Nutrilite Products, Inc.; W. S. Rosecrans, W. S. Rosecrans, Inc.; Kenneth Smith, The Pacific Lumber Company; and Professor E. T. F. Wohlenberg, Yale University. The officers of the Foundation are: C. F. Rehnborg, president; Emanuel Fritz, vice president; Luther G. Hester, treasurer; and Lester L. Lev, secretary.

The research work will be conducted on a project basis with researchers selected from candidates for advanced degrees, professors on sabbatical leave, and others available for the project period.

Currently, competent researchers are being sought to direct projects which have been approved by the board of trustees dealing with natural reforestation following selective cutting and conversion of brush fields to conifer stands.

A project is now under way in the development of a bibliography of redwood literature leading to the publication of this basic information for the use of researchers and others.

Equipment and Products

Silencer Muffler for Power Chain Saws

A new silencer muffler for power chain saws, to lower effectively the saw's noise-level as well as to provide a new safety feature, has been developed by McCulloch Motors Corporation, according to Donald C. Blasius, manager of accessory sales.

"We have felt for some time that there exists a need for a unit that will lower the chain saw noise-level when used in cities, state parks, on farms and other localities where engine-produced sounds represent a problem. The new muffler represents successful design of an effective, lightweight device, which has been an engineering barrier in the past," Blasius said.

The McCulloch muffler is the same size as a standard muffler. Exhaust gases flow into the muffler's primary cavity, then continue through a flat passage into the secondary cavity. The gases are then reversed and directed through another flat passageway before being expelled through a side outlet. McCulloch is the only chain saw manufacturer now manufacturing and marketing silencer-mufflers.

Consulting Foresters

Approved for Listing on January 1, 1956, by the

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The following List of Consulting Foresters is published by the Society of American Foresters for the information of prospective clients.

Individuals listed are members of the Society of American Foresters and as such are believed qualified and competent to perform the technical services specified. However, the Society cannot assume responsibility for the actions of individuals or firms listed.

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Code of Fields of Specialization

1. Arboriculture and tree preservation.
2. Cost and economic studies of forest operations.
3. Forest and wood utilization.
4. Forest management and silvicultural practice.
5. Forest protection from disease.
6. Forest protection from fire.
7. Forest protection from insects.
8. Forest taxation.
9. Game and wildlife management.
10. Logging engineering.
11. Market studies and trade promotion (forest products).
12. Naval stores operations.
13. Pulpwood operations.
14. Range management.
15. Surveying and mapping.
16. Timber valuation and appraisal.
17. Timber volume and quality estimates.
18. Tree planting and reforestation; reproduction studies.
19. Wood preservation.
20. Wood seasoning.
21. Wood technology.

Adirondack Forestry, Inc., Wilmington, New York.
Forest Consultant: David E. Strong.
Territory: Northeastern U. S. esp. Adirondack Mountains.
Specialization: 3, 4, 5, 6, 7, 8, 9, 15, 16, 17, 18, 19. Also aerial photo interpretation, timber and brokerage service, and forest plantation management.

Raymond D. Adolph, 44 Roe Park, Highland Falls, New York.
Territory: Southeastern New York.
Specialization: 4, 5, 6, 7, 18.

Ernest E. Ahler, Forest Consultant, Route 2, Bishop Road, Knoxville 18, Tennessee.
Territory: Southeast.
Specialization: 2, 3, 4, 6, 13, 16, 17, 18. Also preparation, negotiation or advertisement, and administration of timber sales for large and small timber landowners, and boundary line establishment.

Thos. W. Alexander, Consulting Forester, Waynesville, North Carolina.
Territory: South, Central States, and Appalachians.
Specialization: 2, 4, 11, 16, 17.

John R. Allison, P. O. Box 835, Myrtle Beach, South Carolina.
Territory: Eastern South Carolina.
Specialization: 3, 4, 6, 7, 13, 16, 17, 18.

Glenn O. Antonie, Consulting Forester, 411 South Walnut, Demopolis, Alabama.
Territory: Alabama, Mississippi.
Specialization: 2, 3, 4, 5, 6, 7, 8, 12, 13, 15, 16, 17, 18. Also agent for absentee timber owners; timber sales and cutting supervision; forest litigation.

Milton Applefield, Consulting Forester, 605 Lynn Avenue, Lufkin, Texas.
Territory: South.
Specialization: 3, 4, 10, 13, 15, 16, 17, 18. Also sawmill efficiency studies; litigation and damage claims.

S. Gayley Atkinson, Consulting Forester, Huntingdon Road, Huntingdon Valley, Pennsylvania.
Territory: Pennsylvania.
Specialization: 1, 18.

Henry L. Bango, Consulting Forester, P.O. Box 4072, Shreveport, Louisiana.
Consultants: Frank Gaensehals, Robert T. Branton.
Territory: Northern Louisiana.
Specialization: 3, 4, 5, 16, 17, 18. Also purchase and sale of timbered properties.

George Banzhaf & Company, 662 North Water St., Milwaukee 2, Wisconsin.
Territory: Not Limited.
Specialization: 2, 3, 4, 8, 11, 13, 15, 16, 17.

W. R. Barnhill, 1113 Gillespie Avenue, Albany, Georgia.
Territory: Southeastern U. S.
Specialization: 4, 17, 18. Also forest damage investigations, tree planting (contract).

Curtis H. Bauer, Consulting Forester, 46 Liberty Street, Jamestown, New York.
Territory: Western New York and Pennsylvania.
Specialization: 2, 3, 4, 13, 16, 17, 18. In addition to serving the local lumber industry and woodland owners, services are designed for the Christmas tree industry.

Robert C. Beam, Consulting Forester, 708 N. Main Street, Orrville, Ohio.
Territory: Ohio, Pennsylvania, northern West Virginia.
Specialization: 3, 4, 5, 6, 7, 9, 16, 17, 18, 19, 20.

Belanger and Bourget, Land Surveyors and Forest Engineers, 86 Cote de la Montagne, Quebec, Canada.
Consultant: M.-Albert Bourget.
Territory: Canada, especial Quebec.
Specialization: 2, 3, 4, 10, 11, 13, 15, 16, 17, 19, 20, 21. Also boundary lines.

Frank W. Bennett & Associates, Consulting Foresters, 4767 Convention St., Baton Rouge, Louisiana. (Field Hdqrs. at Norwood, La. and Natchitoches, La.)
Consultants: Frank W. Bennett, W. C. Snyder and Lewis C. Peters.
Territory: Southern U. S.
Specialization: 3, 4, 6, 10, 11, 16, 17, 18. Retained as consultants by medium size landowners (500 to 50,000 acres). Manage all forest land resources, including timber, grazing, wildlife, minerals, etc. Make plant location surveys for large wood using plants (pulp mills).

Bigley and Feiss, Foresters, Inc., 767 Blair Blvd., Eugene, Oregon.
Consultants: Sherman Feiss, John Venator, Howard G. McDowell.
Territory: Washington, Oregon, California.

John C. Billingsley, Forest Consultant, 924 Fair Street, Newberry, South Carolina.
Territory: South Carolina and Georgia.
Specialization: 3, 4, 6, 9, 10, 15, 16, 17, 18.

Bishop Brothers, Consulting Foresters, Marion, South Carolina.
Consultant: H. F. Bishop.
Territory: South Carolina and southeastern U. S.
Specialization: 3, 4, 6, 8, 10, 13, 15, 16, 17, 18.

L. L. Bishop, Forest Consultant, 7034 Airline, Houston 9, Texas.
Territory: East Texas.
Specialization: 4, 6, 16, 18.

Lewis M. Boice, Consulting Forester, Orangeburg, South Carolina.
Territory: Within 100 miles of Orangeburg.
Specialization: 4, 6, 15, 16, 17.

Robert K. Boydell, 810 West Pine St., Hattiesburg, Mississippi.
Territory: Mississippi, Alabama, Louisiana.
Specialization: 2, 3, 4, 12, 13, 16, 17, 18. Also forest mapping from aerial photographs, and growth studies.

William J. Bozett, Consulting Forester, Logan, Ohio.
Territory: Ohio and adjoining states.

Specialization: 2, 3, 4, 5, 6, 7, 10, 11, 13, 15, 16, 17, 18, 20. Timber and forest management and services and marketing, damage appraisals. Qualified to serve industry.

Allen W. Bratton, Consulting Forester, Shelterwood, Cooperstown, New York.
Territory: Northeast.
Specialization: 4, 5, 6, 7, 8, 11, 15, 16, 17, 18.

Brown and Brown, Forest Engineers, 614 Lewis Building, Portland 4, Oregon.
Consultants: Eugene R. Walsh (S.A.F. Associate Member), Samuel Rotschy.
Territory: Pacific coast.
Specialization: 2, 3, 4, 6, 8, 10, 11, 12, 15, 16, 17, 18.

Nelson C. Brown, Consulting Forester, 122 Dorset Road, Syracuse 10, New York. During summers, Milford, Pa.
Territory: Northeast.
Specialization: 2, 3, 8, 10, 11, 13, 16, 17.

Paul E. Bruns, 119 Mount Avenue, Missoula, Montana.
Territory: Not limited.
Specialization: 2, 4, 8, 11, 16, 17.

Henry Bull, 1514 Fern Street, New Orleans 18, Louisiana.
Territory: Not limited.
Specialization: Ghost-writing and professional assistance in the preparation of forestry manuscripts and reports.

Charles H. Bunting, Timber Cruiser, 2455 Placer St., Redding, California.
Territory: California.
Specialization: 2, 10, 15, 16, 17.

N. D. Canterbury, Consulting Forester, Parklane Apts. 310, 5701 Jackson St., Houston 4, Texas.
Territory: Texas and southeastern U. S.

Capital Forestry Co., Inc., 2967 Troy Road, Schenectady 9, New York.
Consultant: Ernest L. Handy, Forester & Landscape Architect.
Territory: New York, New England States, Pennsylvania, and New Jersey.
Specialization: Timber cruising, marking and marketing studies. Arboriculture, landscape designing and planting. Tax and insurance appraisals. Experienced in court testimony as qualified experts.

Dudley C. Carey, 116 Fairmeade Road, Louisville 7, Kentucky.
Territory: Not limited.
Specialization: Forest and wood utilization, wood preservation, wood seasoning, wood technology. Also planning for wood conversion operations.

Carl M. Carpenter, Consulting Forester, Nashville, Indiana.
Territory: Indiana.
Specialization: 2, 4, 5, 6, 15, 16, 17, 18.

Clifford B. Carts, 108 Allegheny Ave., Coudersport, Pennsylvania.
Territory: Pennsylvania, New York, Ohio.
Specialization: 4, 8, 10, 16, 17, 18. Also timber trepass and timber damage appraisal; management agent for timberland owners.

C. Dana Chalfant, R. D. No. 3, Gibsonia, Pennsylvania.
Territory: Central and western Pennsylvania, eastern Ohio, northern West Virginia.
Specialization: 4, 6, 9, 16, 18.

Ralph E. Chamberlin, Consulting Forester, River House 810, 2311 N. Front Street, Harrisburg, Pennsylvania.
Territory: Eastern United States.
Specialization: 2, 4, 15, 16, 17, 18. Also timber investment, farm and forest real estate, forest tree nurseries, Christmas tree management, and Harrisburg representative.

Edward J. Clancy, 1916 Sylvan Road, S.W., Atlanta, Georgia.
Territory: Northern Georgia and adjoining states.
Specialization: 4, 15, 16, 17. Also agent for timber owners.

Floyd F. Clark, Consulting Forester, Sky Ranch, Box 756, Ocala, Florida.
Territory: Southeast.
Specialization: 2, 3, 4, 6, 8, 9, 12, 13, 14, 15, 16, 17, 18. Also sale of timber properties; combined timber—cattle operations in the Southeast; insurance company representation for timber and range land.

Stuart F. Clark, Consulting Forester, Box 144, Bellaire, Texas.
Territory: Southern U. S.
Specialization: Forest management, appraisals, investments.

Francis H. Clifton, Private Forester, P. O. Box 326, DeLand, Florida.
Territory: Southeast U. S. A.
Specialization: 3, 4, 13, 16, 17. Registered real estate broker. Forestry exhibits.

D. Irving Cobb, 447 W. French St., Willows, California.
Territory: California.
Specialization: 2, 3, 4, 8, 10, 15, 16, 17, 18.

John D. Coffman, 1759 Spruce St., Berkeley 9, California.
Territory: Principally California.
Specialization: 5, 6, 7, 16. Also forest and park recreational management.

T. S. Coile, Land Consultant, Rt. 2 Box 376, Durham, North Carolina.
Specialization: Soil productivity and its implications in forest land management. Soil surveys and their interpretation for forest management. Forest management planning based on integration of ecological and financial factors. Land evaluation.

Connwood, Inc., South Main Street, Cheshire, Connecticut.
Consultants: Ralph C. Hawley, Michael M. Pochan, Jr., Sherman H. Perkins.
Territory: Connecticut and adjacent areas.
Specialization: 3, 4, 10, 11, 13, 15, 17, 18, 19, 21.

David B. Cook, Consulting Forester, 12 McPherson Terrace, Albany 6, New York.
Territory: Eastern New York.
Specialization: Planted larch.

Philip T. Coolidge, Consulting Forester, retired. Box 102, Bangor, Maine.
General forestry.

William T. Cox, Consulting Forester and Biologist, 2186 Doswell Avenue, St. Paul 8, Minnesota.
Territory: General.
Specialization: Appraisals of forest properties; development of furbearers and other wildlife; selection of new locations for woodworking plants.

Porcius F. Crank, Jr., Consulting Forester, Point Harbor, Currituck County, North Carolina.
Territory: North Carolina and Virginia.
Specialization: 4, 5, 6, 7, 13, 15, 16, 17, 18. Also registered surveyor.

Keith Cranston & Associates, Leland, Mississippi.
Consultant: Keith Cranston.
Territory: Mississippi River Delta, and entire Gulf States Hardwood Bottomlands and Pine Types from Tennessee-Kentucky south.
Specialization: Bottomland Hardwood management, and supplemental commercial cruising. Retained in consultant capacity by firms operating in the South, and as Consultant-Manager for private landowners of bottomland hardwood and pine tracts.

C. P. Cronk, 10 Crown Ridge Road, Wellesley, Massachusetts.
Territory: Not limited.
Specialization: Studies in industrial forestry, with particular reference to problems in utilization, production, merchandising, and public relations.

Lucas M. Dargan, Consulting Forester, P. O. Box 167, Darlington, South Carolina.
Territory: Coastal Carolinas.
Specialization: 4, 6, 9, 16, 17, 18.

John F. Davis, Ironshire and Mumford, Snow Hill, Maryland.
Territory: Eastern and Southeastern states.
Specialization: 2, 3, 4, 11, 13, 16, 17, 18.

Paul B. Davis, Consulting Forester, 118 E. Malta Road, Oak Ridge, Tennessee.
Territory: Tennessee, Kentucky.
Specialization: 1, 2, 3, 4, 13, 16, 17, 18.

Randle J. Dedeaux, Consulting Forester, P. O. Box 52, Perkinson, Mississippi.
Consultant: Jed P. O'Neal (on military leave).
Territory: Southern Mississippi; longleaf and slash pine types.
Specialization: 4, 13, 15, 17. Also growth studies, timber marking and marketing, and agent for absentee timberland owners.

Deep South Consulting Foresters, 961 Briarcliff Road, Tallahassee, Florida. C. H. Schaeffer, Chief Forester.
Territory: Southeastern United States.
Specialization: 1, 4, 5, 6, 7, 10, 16, 17, 18.

W. T. Doherty, Consulting Forester, 421 Morningside Dr. N.E., Albuquerque, New Mexico.
Territory: Arizona, New Mexico.
Specialization: 4, 15, 16, 17. Also land classification.

William A. Eastman, Jr., Consulting Forester, William A. Eastman & Co., Inc., 410 Green Building, Seattle 1, Washington.
Territory: Pacific Northwest.
Specialization: 10, 15, 16, 17, 18. Also preparation and administration of timber sales, land appraisal, timberland brokerage, and timberland management.

W. G. Edwards, 503 West Fairmount Ave., State College, Pennsylvania.
Specialization: 3, 10, 13, 15, 16, 18. Also small sawmill problems, both logging and milling phases.

Inman F. Eldredge, Sr., 1354 Moss Street, New Orleans 19, Louisiana.
Territory: Lower South.
Specialization: Resource surveys for large operations; advice and counsel in large-scale land purchase programs; consultation with forestry staffs on management policy and practice in larger operations.

Employment Service, Forestry Personnel, Leland, Mississippi.
Consultant: Keith Cranston, Personnel director.
Specialization: Personnel placement service provided professional foresters and timbermen.

L. J. Enright, Consulting Forester, 322 Scott Drive, Silver Spring, Maryland.
Territory: Maryland; not limited.
Specialization: 1, 6, 15, 18. Also park management and policy; landscape planting and design.

Charles F. Evans, Consulting Forester, 2867 Piedmont Road, Atlanta, Georgia.
Territory: Southeastern U. S.
Specialization: 4, 6, 16, 17, 18. (Registered Forester under Georgia state law.)

Farmcraft Associates, Inc., Forest Managers, 619 Washington Street (Box 4344) Alexandria, Louisiana and Box 293, Eunice, Louisiana.
Consultant: John J. Carroll.
Territory: Southern U. S.
Specialization: Forest investments and technical forest management for private and industrial holdings. Also litigation and damage appraisals.

Fenner & Day, Company, Inc., Forest Fire Protection Engineering, 4355 Bermar Avenue, Richmond 11, Calif.
Consultant: Ralph L. Fenner.
Territory: California.
Specialization: 2, 4, 6, 14. Wildland fire control and use.

David S. Findlay, Consulting Forester, 20 East 5th Street, Jamestown, New York.
Territory: Western New York and Pennsylvania.
Specialization: 4, 15, 16, 17.

George M. Fisher, Consultant Landscape Forester, P. O. Box 971, Tyler, Texas.
Territory: Northeastern Texas.
Specialization: 1, 5, 7, 9, 18. Also city forestry and shade tree problems; landscape design, construction, and maintenance; forest parks and recreational planning.

Reginald D. Forbes, Consulting Forester, R.F.D. 1, Ambler, Pennsylvania.
Territory: Eastern U. S.
Specialization: 4, 6, 17, 18. Also forest resource surveys of timber available to manufacturing plants in specified territories.

Forest Land Management Co., P. O. Box 1046, Morgantown, West Virginia.
Consultant: Thomas G. Clark.
Territory: West Virginia, Western Pennsylvania, Western Maryland.
Specialization: Forest land appraisal, forest real estate, timber sales, and markets.

Forest Products Management Company, 1504 Broad Street, Camden, South Carolina.
Consultant: H. R. Oliver.
Territory: Carolinas.
Specialization: 3, 4, 6, 11, 13, 15, 16, 17, 18, 20. Also land appraisals, timber and land sales. South Carolina registered land surveyor and dogwood and hickory industry consultant.

Forestry Aids, Manning, South Carolina; 355 Lincoln Road, Miami Beach, Florida. Phone: 581526; 5-4055.
Consultants: Seymour I. Somberg, Richard E. Haas.
Territory: Southeastern U. S.
Specialization: 2, 3, 4, 8, 10, 11, 13, 15, 16, 17, 20. Acquisition and management for investors; forest resource surveys for industry.

Forestry Associates, Inc., P. O. Box 72, Hart, Michigan.
Territory: Michigan.
Specialization: 3, 4, 5, 6, 7, 9, 11, 13, 15, 16, 17, and 18.

Forestry Consulting Services, Deluxe Building, 297 West Michigan Avenue, Jackson, Michigan.
Consultant: George D. Blair.
Territory: Nationwide.
Specialization: 1, 2, 4, 11, 16, 19. Also various forest growth and vegetative control planning services to public utility industries.

Forestry Suppliers, Inc., Consulting Foresters and Suppliers, Battlefield Station, Jackson 4, Mississippi.
Consultants: Ben C. Meadows, Purvis R. Huff, Robert E. Drexler.
Territory: Gulf States.
Specialization: 3, 4, 6, 13, 15, 16, 17, 18. Also forest land analysis and management, growth studies, timber and land sales, and a complete line of supplies and equipment for foresters and timber owners.

E. A. Foster, 6205 East Halbert Road, Bethesda 14, Maryland.
Territory: Chesapeake Bay and Potomac River Region.
Specialization: 4, 16, 17, 18. Also advice and assistance to woodland owners in marketing timber and in utilizing government conservation assistance for timber stand improvement and reforestation; cost-benefit estimates of forest improvement measures; timber growth estimates and site evaluation; and preparing woodland management plans by aerial photo interpretation plus ground examination.

R. C. Fraunberger, Forest Products Business Consultant, 3 South Homestead Drive, Yardley, Pennsylvania.
Specialization: 2, 3, 4, 10, 11, 16, 17, especially in hardwoods, domestic and foreign.

E. A. Friend, Jr., 1008 Delaware Avenue, Suffilk, Virginia.
Territory: Tidewater and Eastern Shore of Virginia, Northeast North Carolina.
Specialization: 4, 15, 16, 17. Absentee landowners' agent, damage, trespass, and condemnation claims.

Emanuel Fritz, Consulting Forester, 102 The Uplands, Berkeley 5, California.
Territory: West; pine, redwood, and fir.
Specialization: 2, 3, 4, 6, 10, 11, 16, 17, 18, 19, 20, 21. Also consultant on state forest and park management and policy.

LeRoy Frontz, Consulting Forester, Allenwood, Pennsylvania.
Territory: Eastern U. S.
Specialization: 3, 4, 5, 6, 7, 9, 16, 17, 18. Also landscaping, forest and ornamental nurseries, farm forestry, forest parks and recreation, landuse planning, soil conservation, farm evaluation and appraisal.

Edward P. Furlow, 810 Gouthier Road, Falls Church, Virginia.
Territory: Virginia, Maryland, West Virginia.
Specialization: 2, 3, 4, 6, 8, 13, 16, 17, 18, 19, 20.

William E. Garvey, Jr., La Plata, Maryland.
Territory: Southern Maryland.
Specialization: Timber cruising, appraisal and marking.

Paul H. Gerrard, 312 E. 3rd St., Russellville, Arkansas.
Territory: Arkansas.
Specializations: 1, 2, 3, 5, 6, 8.

John D. Gilmour, Consulting Forester, 5823 McLynn Avenue, Montreal, Quebec, Canada.
Territory: Not limited.
Specialization: 2, 4, 8, 10, 16, 17. Also tropical logging.

A. R. Gobeil, Consulting Forest Engineer, 130 St-Jean, Quebec, Canada.
Territory: Province of Quebec.
Specialization: 2, 3, 4, 7, 9, 10, 11, 13, 15, 16, 17. Also broker in timber properties and forest limits.

Nathan B. Golub, Consulting Forester, Buckstone Farm, Washington Crossing, Pennsylvania.
Territory: Pennsylvania and New Jersey.
Specialization: 4, 15, 16, 17, 18. Also water management plans. Registered engineer and surveyor in Pennsylvania.

Vernon A. Good, Consulting Forester, American Bank Building, Portland, Oregon.

Territory: Oregon, Washington, Idaho, Northern California.
Specialization: 2, 4, 8, 13, 14, 16, 17, 18. Forest property management, timber marking, sales contracts and supervision, acquisition, aerial photo inventory, fire damage appraisals, and timber tax assistance. Also watershed and land use management.

Goodwin & Davis, Consulting Foresters, 6330 Park Avenue, Indianapolis, Indiana.
Consultants: Robert F. Davis, Donald K. Goodwin.
Territory: Indiana.
Specialization: 4, 10, 11, 16, 17, 18.

R. W. Graeber, Consulting Forester, 303 Hillcrest Road, Raleigh, North Carolina.
Territory: North Carolina.
Specialization: 4, 6, 13, 16, 17, 18. Also buying and selling timber and timberlands as service to either buyer or seller; adjusting problems arising from over-cutting or trespass.

Green's Timber Service, Johnson City, Tennessee.
Consultant: L. Stanley Green.
Territory: Southeastern U. S.
Specialization: 2, 3, 4, 6, 10, 13, 16, 17, 18. Also custom sawmilling.

Russell F. Griffith, Consulting Forester, 506 Third Street, Harvard, Illinois.
Territory: Southern Wisconsin and northern Illinois.
Specialization: 4, 5, 6, 7, 13, 15, 16, 17, 18.

Kenneth Wayne Guenther, Forest Products Industrial Engineer, 2524 Koos Bay Blvd., Coos Bay, Oregon.
Territory: Oregon, Washington, and California.
Specialization: Those fields relative to the industrial engineering applications to the forest products industries.

Alvin B. Hafer, Consulting Forester, Laurinburg, North Carolina.
Territory: North Carolina, South Carolina, and Southeast.
Specialization: 4, 15, 16, 17. Also purchase and sale of timbered properties.

Albert G. Hall and Associates, 1740 K Street, NW, Washington 6, D. C.
Consultants: Charles M. Schwartz, McClain B. Smith, Jr.
Specialization: 2, 3, 4, 5, 6, 7, 8, 11, 13, 16, 17, 18. Also Washington representation.

Giles G. Hall, Professional Forester, 402 Cumberland Avenue, North Augusta, South Carolina.
Territory: South Carolina, Georgia.
Specialization: 2, 3, 4, 5, 6, 7, 10, 11, 13, 16, 17, 18. Also tree pruning in planted stands. Sawtimber and pulpwood buyer.

Jack M. Hall, Consulting Forester, 23½ East Central Avenue, Moultrie, Georgia.
Territory: Georgia, Florida, Alabama, and South Carolina.
Specialization: 4, 5, 6, 7, 11, 12, 15, 16, 17, 18.

Francis G. Hambrook, Consulting Forester, East Sandwich, New Hampshire (mailing address, R.F.D., Center Harbor, N. H.).
Territory: New Hampshire.
Specialization: 2, 4, 15, 17. Also management of timber properties and agent for absentee landowners, selective cutting, timber marking and marketing assistance, timber stand improvement work, including improvement cuttings in immature stands.

Carl Hammarstrom, Consultant Forester, P. O. Box 212, Meadville, Mississippi.
Territory: Southwest Mississippi.
Specialization: 4, 15, 16, 17, 18, timber sale administration, damage claims, county surveyor.

Hammon, Jensen, and Wallen, Mapping and Forestry Services, 660 Hegenberger Road, Oakland 21, California.
Consultants: Herbert A. Jensen, Arnold F. Wallen.
Territory: United States and foreign.
Specialization: 2, 3, 4, 6, 8, 10, 11, 13, 15, 16, 17, 18. Also planimetric and topographic mapping, land net delineation, general land classification for appraisal purposes and ranchland management, and aerial photogrammetric consulting service.

David H. Hanaburgh, Consulting Forester, Buchanan, New York.
Territory: Northeast.
Specialization: 2, 3, 4, 9, 10, 11, 13, 16, 17. Also negotiation of rights for hunting, fishing, trapping, and water storage.

Gene M. Harris, Registered Consulting Forester, 2112 Hagan Drive, Tallahassee, Florida.
Territory: Florida, Georgia, and Alabama.
Specialization: 3, 4, 5, 6, 7, 8, 9, 12, 13, 15, 16, 17, 18.

Joseph F. Havel, Box 11, Pawley's Island and Georgetown, South Carolina.
Territory: North Carolina, South Carolina, Georgia, and Florida.
Specialization: 3, 4, 10, 11, 13, 16, 17.

E. T. Hawes, Consulting Forester, 2204 White Oak Drive, Valdosta, Georgia.
Territory: Southeast.
Specialization: 2, 4, 8, 11, 12, 13, 16, 17, 18.

Ralph W. Hayes, Consulting Forester, 2241 Myrtle Avenue, Baton Rouge, Louisiana.
Territory: Gulf States.
Specialization: 2, 3, 13, 15, 16, 17. Also investigation and settlement of claims regarding timber in use in the South.

George S. Haynes, Consulting Forester, S. 321 Bowdish Road, Opportunity, Washington.
Territory: Western Montana, northern Idaho, eastern Washington.
Specialization: 4, 6, 10, 15, 16, 17, 18.

Hiram L. Henderson, Manufacturer of Dry Kilns, 119 Stone Ridge Drive, Syracuse, New York.
Territory: Principally eastern states.
Specialization: 20. Also construction of lumber dry kilns.

V. W. Herlevich, Consulting Forester, 3627 Stratford Blvd., Wilmington, North Carolina.
Territory: North Carolina, South Carolina.
Specialization: 4, 6, 15, 16, 17, also forest fire damage appraisals.

Halsey M. Hicks, Consulting Forester, Box 575, Brattleboro, Vermont.
Territory: Not limited.
Specialization: 2, 3, 4, 8, 15, 16, 17.

Monterey L. Holst, Consulting Forester, P. O. Box 125, East Greenwich, Rhode Island.
Territory: New England.
Specialization: 3, 4, 6, 9, 10, 13, 15, 16, 17, 18, 21.

Douglas F. Horan, Consulting Forester, 316 Windsor Street, Lakeland, Florida.
Territory: Florida.
Specialization: 4, 11, 15, 16, 17.

William P. House, Consulting Forester, Chesham, New Hampshire.
Territory: New Hampshire and adjacent areas.
Specialization: 2, 3, 4, 16, 17. Marking and stumpage sales.

Richard F. Howard, Forestwald, Box 14, Franklinville, New York.
Territory: Pennsylvania, New York, New England.
Specialization: 3, 4, 6, 15, 16, 17, 18.

T. M. Howerton, Jr., Forestry Consultant, Madison, Florida.
Territory: Southeastern states.
Specialization: Marketing, Management.

John E. Hudson, 1709 N.W. 11th Road, Gainesville, Florida.
Territory: Southeastern United States.
Specialization: 4, 12, 16, 17.

G. W. Hult, Consulting Forester, 3029 Johnson Street, Corvallis, Oregon.
Territory: Oregon, California, and southwestern U. S.
Specialization: 4, 16, 17. Forest fire insurance investigations, cooperatives, forest recreational and wildlife surveys. Timber sales, acquisition, and exchanges.

LeRoy W. Huntington, Consulting Tropical Forester, 52 Wesley Street, Baldwin, New York.
Territory: Latin America, Orient, Africa.
Specialization: 2, 3, 4, 10, 11, 15, 16, 17, 18; and tropical hardwoods.

R. Wilson Hutchison, Consulting Forester and Logging Engineer, 167 Walnut Lane, Eugene, Oregon.
Territory: Washington, Oregon, California.
Specialization: 2, 3, 4, 6, 10, 15, 16, 17. Registered professional engineer of the State of Oregon.

Intermountain Timber Service, 1714 N. 16th St., Boise, Idaho.
Territory: Idaho and a portion of eastern Oregon.
Specialization: 2, 4, 6, 8, 16, 17. Also forest engineering. Timber valuation and logging costs, and access road construction costs.

Gorham E. Jackson, Consulting Forester, 604 West Main Street, Washington, North Carolina.

Territory: Eastern North Carolina, southeastern Virginia. All forest types.
Specialization: 2, 4, 6, 9, 10, 13, 15, 16, 17, 18. Also investigations of forest resources for pulp and paper companies, and land agent for absentee timberland owners.

Alex J. Jaenicke, 3040 N. E. 14th Avenue, Portland 12, Oregon.
Territory: Oregon, Washington, California, Idaho, and Montana.
Specialization: 4, 5, 7. Also volume estimates in insect- and disease-killed timber and rates of deterioration for management and taxation purposes.

M. E. Jelley, Consulting Forester, 122 Haywood Avenue, Chattanooga 5, Tennessee.
Territory: Southeastern and eastern states.
Specialization: 2, 3, 4, 10, 11.

David G. Jennings, Consulting Forester, 110 Spring Street, Port Jefferson, New York.
Territory: New York.
Specialization: 1, 3, 4, 6, 15, 18.

F. J. G. Johnson, and Associates, Suites 12 & 13, 425 Howe Street, Vancouver 1, B. C., Canada.
Territory: British Columbia (no regional limitation).
Specialization: 2, 3, 4, 6, 11, 15, 16, 17.

Ralph S. Johnson, Laurinburg, North Carolina.
Territory: Eastern Carolinas.
Specialization: 3, 4, 6, 13, 15, 16, 17.

Robert W. Jones, Rt. 2, Box 2187. Bellevue, Washington.
Territory: Washington.
Specialization: 10, 11, 15, 16, 17, 18. Also photogrammetry and court cases concerning boundary disputes.

E. V. Jotter, Consulting Forester, 30 Cedarlawn Drive, Dayton 5, Ohio.
Territory: Ohio, Kentucky.
Specialization: 3, 4, 6, 9, 11, 16, 17, 18. Also development and management of community forests conservation education, cooperation with soil conservation districts.

Frank E. Karpick, 134 Kay St., Buffalo 15, New York.
Territory: Northeastern United States
Specialization: 1, 5, 7. Landscaping, and planting and maintenance programs for city shade trees.

S. G. Keedwell & Company, Consulting Foresters, Emporia, Virginia.
Territory: Eastern and southern U. S.
Specialization: 3, 4, 10, 11, 13, 15, 16, 17. Also forest litigation and purchase and sale of land and timber.

John F. Kellogg, Forester, Urania, Louisiana.
Territory: Louisiana; pine and hardwood.
Specialization: 4, 5, 11, 16, 17.

Kiefer and Quaile, Consulting Foresters, Lakeville, Connecticut.
Consultants: George C. Kiefer, Jr. and George E. Quaile.
Territory: Eastern U. S.
Specialization: 4, 6, 8, 15, 16, 17, 18. Also management of timber properties and plantations, timber marking and marketing, watershed management, and agent for woodland owners.

H. Thorn King, Consulting Forester and Land Surveyor, Hancock, New Hampshire.
Territory: Southwestern New Hampshire.
Specialization: 2, 3, 4, 15, 16, 17, 18. Also farm forestry and private forestry; marking; registered land surveyor.

G. Ed. Knapp, Consulting Forester, 661 Forest Hill Road, Macon, Georgia.
Territory: Southern states.
Specialization: 2, 3, 4, 10, 11, 13, 16, 17, 18.

Robert F. Knoth & Company, Foresters, Appraisers, Surveyors, 39 Broad Street, Charleston 3, South Carolina.
Consultant: Robert F. Knoth.
Territory: Domestic and foreign.
Specialization: 4, 6, 10, 11, 13, 15, 16, 17, 18. Land agent for absentee timberland owners; foreign timberland investigations; veneer log inspection and procurement; timber investments and loans.

Arthur Koehler, Wood Technologist, 1959 Thayer Ave., Los Angeles 25, California.
Specialization: Wood utilization.

F. Bruce Lamb, Tropical Forestry Consultant, Box 327, Canon City, Colorado.
Territory: Mexico, Central and South America, and Caribbean Islands.
Specialization: 2, 3, 4, 10, 11, 15, 16, 17, 18. Mahogany and other tropical hardwoods.

William N. Lane, Forest Management Consultant, 2 Kendall St., Rochester, New Hampshire.
Territory: Northeastern United States.
Specialization: 2, 3, 4, 5, 6, 7, 8, 11, 13, 15, 16, 17, 18. Also damage surveys, forest litigation, income tax assistance as pertaining to sale of timber.

The Langdale Company, P. O. Box 980, Valdosta, Georgia.
Consultants: Hartley Langdale, Jr., T. E. Connell.
Territory: Georgia, northern Florida; slash pine belt.
Specialization: 2, 3, 4, 6, 8, 9, 10, 11, 12, 13, 15, 16, 17, 18, 19.

Frank M. Langford, Waverly, Tennessee.
Territory: Middle Tennessee, South Kentucky, and North Alabama.
Specialization: Timber management — evaluation. Utilization specialist in hardwoods.

Lauderburn-White, 1204 Adeline Street, Hattiesburg, Mississippi.
Consultants: D. E. Lauderburn, John B. White.
Territory: South Mississippi and adjacent territory.
Specialization: 4, 11, 16, 17. Complete timber sales service, marking, finding buyers of stumpage, timber sale contracts, supervision and inspection of cutting operations, technical marketing assistance to small sawmills.

Frank J. Lemieux, Consulting Forester, 833 Whitney Building, New Orleans, Louisiana.
Territory: Southern states, Mexico, Central and South America.
Specialization: 2, 4, 6, 13, 15, 16, 17.

Paul C. Lemon, Consulting Forester, State College, Albany 3, New York.
Territory: New York and New England.
Specialization: 1, 6, 9, 14. Also commercial pilot, applications of aviation to forestry.

T. A. Liefeld, Consulting Forester, Thomasville, Georgia.
Territory: Florida, Georgia.
Specialization: 2, 3, 4, 5, 6, 7, 8, 11, 12, 13, 15, 16, 17, 18.

L. D. Lloyd, Consulting Forester, Flying L Ranch, Glenwood, Washington.
Territory: Worldwide.
Specialization: 2, 3, 4, 6, 8, 10, 13, 15, 16, 17.

Harvey J. Loughead, Consulting Forester, 399 Vanderbilt Road, Biltmore Station, Asheville, North Carolina.
Territory: Eastern U. S.
Specialization: 3, 4, 12, 13, 16, 17. Also watershed management.

Robert T. MacDougall, Jr., 124 Cresta Drive, Ukiah, California.
Territory: Coast pine and southern redwood regions of California.
Specialization: Timber cruising, forest management, mapping.

Donald K. Maissurow, Consulting Forester, New Haven Avenue, Derby, Connecticut.
Territory: New England.
Specialization: 1, 4, 5, 7, 15, 16, 17. 18. Also landscape forestry.

Carol W. Marlow, 4232 Redonda Lane, Dayton 6, Ohio.
Territory: Ohio.
Specialization: 1, 5, 7. Landscaping, planting, and city shade tree maintenance programs.

E. D. Marshall, Consultant in Forest Products, 541 Humason Ave., Lufkin, Texas.
Territory: Southern and Western United States; Mexico, Central and South America.
Specialization: 3, 11, 13, 19, 20, 21.

Edward A. McAllister, 311 Lynchburg Avenue, Colonial Heights, Virginia.
Territory: Virginia and Southeast.
Specialization: 3, 4, 9, 10, 11, 13, 16, 17.

Thomas A. McFarland, Forest Consultant, 120 Truman St., Thomson, Ga.
Territory: Georgia.
Specialization: 4, 15, 16, 17, 18.

James T. McMahon, P. O. Box 88, Kountze, Texas.
Territory: Texas and Louisiana.
Specialization: 4, 13, 16, 17, 18. All phases of forest land management.

Philip C. Meinzer, Consulting Forester, Route 3, Kokomo, Indiana.
Territory: Indiana.
Specialization: 1, 4, 16, 17, 18.

Fred B. Merrill, Consulting Forester, Box 261, Clinton, Louisiana.
Territory: Mississippi and Louisiana, within 100 miles of Baton Rouge.
Specialization: 4, 5, 6, 7, 11, 13, 16, 17. Also buying and selling timberlands; training estate and company personnel; and Gaylord pulpwood dealer in East and West Feliciana Parishes.

James W. Meteer Consulting Forester, R. D. 6, Wooster, Ohio.
Territory: Not limited.
Specialization: 2, 3, 4, 11, 16, 17, 18. Also Christmas tree management. Specialist in continuous forest inventory.

William H. Meyer, Consulting Forester, West Rupert, Vermont.
Territory: Northeast.
Specialization: 2, 3, 4, 9, 11, 16, 17, 18. Also farm management and conservation education.

Raymond M. Miller, Consulting Forester, P. O. Box 802, Jamestown, New York.
Territory: Pennsylvania, New York, Ohio.
Specialization: 4, 16, 17. Also timber and lumber marketing service.

Milliken Forestry Co., 31 Heathwood Circle, Columbia, South Carolina.
Consultant: William F. Milliken.
Territory: Southeast, principally South Carolina.
Specialization: 3, 4, 6, 11, 13, 15, 16, 17, 18. Also sustained yield plans and contract tree planting; timberland agent for absentee timberland owners, hardwood-pine conversion and control.

William J. Mills, Forest Engineer, 201 Volunteer Building, Chattanooga 2, Tennessee.
Territory: Southeastern states, Mexico.
Specialization: 3, 4, 11, 13, 15, 16, 17.

Malcolm A. Milne, Consulting Forester and Landscape Engineer, 394 Phillips Road, Webster, New York.
Territory: Northeast.
Specialization: 1, 5, 7, 18. Also landscaping, estate development and management, and forest recreation.

R. B. Milne, Consulting Forester, Box 371, Petersburg, Virginia.
Territory: Eastern states; all forest types.
Specialization: 3, 4, 10, 16, 17.

Stuart Moir, Forest Counsel, Western Forestry and Conservation Association, 712 U. S. National Bank Building, Portland 4, Oregon.
Territory: Western United States, British Columbia, Alberta, Canada.

Robert Moore, Consulting Forester, Danville, Pennsylvania.
Territory: Not restricted.
Specialization: 2, 3, 4, 6, 8, 10, 11, 13, 15, 16, 17, 18, 19. Also bankruptcy cases, trade association work, coal lands, trusteeship cases, litigation and damage claims, estate problems.

R. A. Morin, Consulting Forester, 2532 Sunset Ave., Greenville, North Carolina.
Territory: Eastern North Carolina.
Specialization: 4, 13, 16, 17, 18. Also growth studies, timber marking and marketing, and agent for absentee timberland owners.

George W. Morrill, Jr., Consulting Forester, R.F.D. #3, Concord, New Hampshire.
Territory: New Hampshire, Maine, Vermont.
Specialization: 4, 13, 15, 16, 18. Also landscaping, forest recreation, and beautification.

Charles H. Moyer, Consulting Forester, R.F.D. #2, Newfield, New York.
Territory: Northeast.
Specialization: 4, 10, 15, 16, 17.

Marion N. Nance, Inland Empire Timber and Land Service, W. 1104 Fifteenth Avenue, Spokane 41, Washington.
Territory: Pacific Northwest.
Specialization: 2, 3, 4, 6, 15, 16, 17. Also timber sale contract preparation and administration; ownership and cutting line establishment; and public domain land status, laws, and regulations.

National Timber Consultants, Box 497, Salem, Missouri.
Consultants: Ed Woods, Charles Kirk.
Territory: Central and southern states.
Specialization: Management information. land appraisal, and valuation, mapping and estimating.

New England Forest Industries, Inc., 3 North State Street, Concord, New Hampshire.
Consultants: Dr. Gordon M. Day, Contoocook, N. H.; Richard L. Johnston, Center Harbor, N. H.; Glenn Bergey, Tamworth, N. H.; Eugene Carpenter, Boscawen, N. H.; Robert Eggleston, Center Sandwich, N. H.; Bradford Monk, Penacook, N. H.
Territory: New England.
Specialization: Planting, selective logging, appraisals, forest land brokerage, intermediate cuttings, marking, surveys-cruises.

New England Forestry Foundation, 3 Joy Street, Boston 8, Massachusetts.
Consultants: J. Milton Attridge, Allison G. Catheron, II, Stanley B. Coville, Frederic P. Elwert, Kenneth E. Jones, Gerald C. Knickerbocker, Allan W. Plumb, Donald R. Poppema, David A. Rock, Richard L. Sawyer.
Territory: New England.
Specialization: 2, 3, 4, 5, 6, 7, 8, 9, 10, 13, 15, 16, 17, 18.

New England Silvicultural Service, Athol Road, Petersham, Massachusetts.
Consultants: Fred M. Hunt, Orville R. Bissett.
Territory: Central New England.
Specialization: 4, 10, 15, 16, 17, 18. Also management of pine plantations.

Samuel A. Newman, P. O. Box 156, Everett, Washington.
Territory: Washington.
Specialization: 8, 10, 15, 16, 17.

Nittany Timberlands, Inc., P.O. Box 181, State College, Pennsylvania.
Consultants: R. A. Bartoo, Richard C. Bedger, R. M. Pyle, Orvel A. Schmidt, Frank J. Wawrynovic.
Territory: Pennsylvania.
Specialization: 4, 9, 13, 16, 17, 18.

Leon A. Nix, Consulting Forester and Logging Engineer, 260 N. Main St., Brampton, Ontario, Canada.
Territory: Not limited.
Specialization: 2, 3, 4, 6, 10, 13, 15, 16, 17. Also farm woodlot management.

Northeast Forestry Service, R. D. 1 (Pike County), Hawley, Pennsylvania.
Consultant: Stanley Mesavage, Walter Kaulfuss, and Robert Longtine.
Territory: Northeast and Middle Atlantic Region.
Specialization: 3, 4, 10, 11, 15, 16, 17.

Northern Timber Services, Curtis R. Lytle, Consulting Forester, Box 365, Wellsboro, Pennsylvania.
Territory: North central Pennsylvania.
Specialization: 4. Also sugar-bush and Christmas tree, management.

Northern Tree Co., Inc. Petoskey, Michigan.
Consultants: Thomas F. Schweigert, George E. Young and William J. McDowell.
Territory: Michigan.
Specialization: 1, 4, 5, 6, 7, 15, 16, 17, 18. Also contract tree planting; registered land surveyor.

Ernest Nutting & Co., Consulting Forester, Box 51, Camden, South Carolina.
Associate: Royal E. Cummings.
Territory: The Carolinas and Georgia.
Specialization: 4, 13, 15, 16, 17, 18. Serving timberland owners.

Charles R. Page, Jr. and Associates, Forest Land Managers and Consultants, 415 Friar Road, Chattanooga 11, Tennessee.
Associate: George W. Holston, Jr.
Territory: Southeastern states.
Specialization: 4, 7, 11, 15, 16, 17.

Pomeroy & McGowin, Forest Managers, Monticello, Arkansas and Chapman, Alabama.
Consultants: L. K. Pomeroy, Julian F. McGowin (S.A.F. Associate Member), Z. W. White, T. R. Scott, Jr., W. V. Gandy, D. W. Samson.
Territory: Southern states, South America.
Specialization: 4, 8, 11, 13, 16, 17, 18. Also aerial forest surveys.

Pond & Moyer, Inc., Co., Consulting Foresters, 107 Homestead Road, Ithaca, New York.
Consultant: James D. Pond.
Territory: New York and Northeast, Latin America; northern hardwoods, spruce-fir, central hardwoods, tropical woods.
Specialization: 1, 2, 3, 4, 8, 10, 11, 13, 15, 16, 17, 18, 21.

Prentiss & Carlisle Company, Inc., Timberland Service—Engineers, 107 Court Street, Bangor, Maine.
Consultants: George T. Carlisle, Philip P. Clement, Robert W. Averill, George D. Carlisle, Edward K. Brann.
Territory: United States, Canada.
Specialization: 2, 3, 4, 8, 10, 11, 13, 15, 16, 17, 18.

W. H. Price, Forest Consultant, 2626 West Lynn Street, Seattle 9, Washington.
Specialization: 1, 4, 6, 7, 8, 16, 17.

John G. Rawls Co., Consulting Foresters, 2793 Pinewood Drive, Macon Georgia.
Consultant: John G. Rawls (S.A.F. Affiliate Member).
Territory: Southeast.
Specialization: 10, 12, 13, 15, 16, 17.

A. B. Recknagel, P. O. Box 15, Ithaca, New York.
Territory: Anywhere in continental United States.
Specialization: Forest management, forest utilization (particularly pulp and paper).

Reed Forestry & Equipment Co., Consulting Foresters, Box 102, Smithfield, North Carolina.
Consultant: R. E. Reed.
Territory: Southeastern states; all forest types.
Specialization: 2, 3, 4, 11, 13, 15, 16, 17, 18. Also custom sawing and sale of forestry equipment.

Tom Reimer, Consulting Forester, Box 395, Albany, Georgia.
Territory: No restrictions.
Specialization: 2, 3, 4, 6, 10, 12, 13, 15, 16, 17, 18.

Charles E. Reynolds, 4150 S. W. 110 Avenue, Beaverton, Oregon.
Territory: Washington, Oregon, and Northern California.
Specialization: 4, 10, 15, 16, 17, 18.

Owen L. Riley, Consulting Forester, 12-A Country Club Apts., Columbus, Georgia.
Territory: Georgia and Alabama.
Specialization: 4, 7, 9, 16, 17. Also agent for timberland owners; timber marketing and assistance; damage appraisal; aesthetical forestry practices; planning for special forest areas, private parks, etc.

Robinson Improvement Company, St. Augustine National Bank, St. Augustine, Florida.
Consultant: Allen D. Nease.
Territory: Florida and South Georgia.
Specialization: 2, 3, 4, 5, 6, 7, 9, 12, 13, 15, 16, 17, 18.

A. P. Russell, Forest Engineer, 11 Maplewood Drive, Sumter, South Carolina.
Territory: Not limited, but principally southern region.
Specialization: 2, 3, 4, 10, 11, 13, 15, 16, 17, 18. Also forest resource surveys for industry, timberland acquisition and sales, contract logging supervising, log scaling and grading.

Sable Mountain Corporation, 68 Phillips Street, Rutland, Vermont.
Consultants: Richard C. Rose and Albert J. Boris.
Territory: Central Vermont.
Specialization: Woodland management, including marking and marketing of standing timber and trained work crew for planting, pruning, and timber stand improvement. Also operate own forest.

Eino Sainio, Consulting Forester, 320 W. Helen St., Newberry, Michigan.
Territory: Eastern Upper Peninsula of Michigan.
Specialization: 3, 4, 13, 15, 16, 17. Registered land surveyor.

Leslie A. Sample, Consulting Forester, 9025 Mansfield Road, Shreveport, Louisiana.
Territory: Arkansas, Louisiana, Texas.
Specialization: 3, 4, 7, 13, 15, 16.

Paul M. Sanders, Consulting Forester, 419 N. E. Hazelfern Place, Portland 15, Oregon.
Territory: Unrestricted.
Specialization: 2, 4, 6, 8, 15, 16, 17, 18. Property management for absentee owners.

Roy Dale Sanders, Visual Education Technician, Rural Route 6, Evrodale, Brainerd, Minnesota.
Territory: Unlimited.
Specialization: Forester, wildlife technician, photographer. The entire production supervision of 16 millimeter color educational motion pictures, including script writing, direction, photography, editing, and sound supervision. Also production of color and black and white still picture visual education material.

Sandhill Forestry Company, 206 Surginor Road, Rockingham, North Carolina.
Consultant: Walter J. Marshburn, Jr.
Territory: Southeastern United States.
Specialization: 3, 4, 6, 13, 16, 17, 18. Also woodland property sales.

L. E. Sawyer, RR #1, West Terre Haute, Indiana.
Territory: Southwestern Indiana and southeastern Illinois.
Specialization: 4, 5, 6, 7, 16, 17, 18.

Joseph A. Schmidt, Consulting Forester, Box 470, Charleston, South Carolina.
Territory: Southeast.
Specialization: 4, 13, 15, 16, 17. Also growth studies, timber marking.

William R. Schofield, Forest Engineer & licensed Civil Engineer, 681 Market Street, San Francisco 5, California.
Territory: California.
Specialization: 5, 6, 7, 8, 15, 16, 18.

C. D. Schultz & Co., Inc., Foresters and Engineers, Forest Consultants, 946 White-Henry-Stuart Building, Seattle, Washington.
Consultants: C. D. Schultz, R. D. Schultz.
Territory: Oregon, Washington, California mainly; but no regional limitations.
Specialization: 2, 3, 4, 6, 8, 10, 11, 15, 16, 17, 18, 20.

C. D. Schultz & Co., Ltd., Foresters and Engineers, Forest Consultants, 325 Howe Street, Vancouver, British Columbia.
Consultants: C. D. Schultz, R. D. Schultz and 12 members of the Canadian Institute of Forestry. Present staff, 80 members.
Territory: No regional limitations.
Specialization: 2, 3, 4, 6, 8, 10, 11, 13, 15, 16, 17, 18, 19, 20.

James W. Sewall Company, Consulting Foresters, Old Town, Maine, and Fredericton, New Brunswick, Canada.
Consultants: Frank M. Call, Carleton C. Young, Jr., Theodore C. Tryon (S.A.F. Affiliate Member), Earl W. Raymond Edwin Forsythe.
Territory: Northeast.
Specialization: 3, 4, 5, 8, 13, 15, 16, 17, 18. Also aerial photography.

R. B. Shannon & Associates, Registered Surveying—Consulting Forestry, Colwell-Arnold Building, Kittanning, Pennsylvania; also Indiana, Pennsylvania, and Emporium, Pennsylvania.
Consultants: Robert B. Shannon, Joseph F. Gray.
Territory: Pennsylvania, New York, Ohio, West Virginia.
Specialization: 2, 4, 15, 16, 17, 18. Also timber damage appraisals; farm appraisals; construction layout.

James R. Simmons, Consulting Forester, 30 Gordon Street, Bel Air, Maryland.
Territory: Eastern states.
Specialization: 2, 3, 4, 10, 15, 16, 17, 18.

William R. Sizemore & Co., Foresters, Surveyors, and Land Managers, Tallassee, Alabama.
Consultants: William R. Sizemore, William T. Ogletree, and Mary H. Sizemore, (S.A.F. Associate Member).
Territory: Alabama.
Specialization: 2, 3, 4, 8, 11, 13, 15, 16, 17, 18.

Albert A. Smith, P. O. Box 644, Crockett, Texas.
Territory: Texas and surrounding states.
Specialization: 1, 3, 4, 5, 6, 7, 13, 16, 17, 18. Also agent for absentee owners. Timber sales and cutting supervision and all phases of forest management.

Samuel S. Snook, P. O. Box 521, Walterboro, South Carolina.
Territory: South Carolina.
Specialization: 4, 15, 16, 17.

Dean Solinsky, Hobart Bldg., San Francisco 4, California.
Territory: California.
Specialization: Timberland appraisals and management.

Seymour I. Somberg, 408-411 Olympia, Miami 32, Florida. Phone 3-8738.
Territory: Southeastern U. S. and Latin, Central, and South America.
Specialization: 2, 3, 4, 8, 10, 11, 13, 15, 16, 17, 20. Acquisition and management for investors; forest resource surveys for industry.

Southeastern Foresters, Forest Consultants, Professional Bldg., 224 North 3rd St., Jacksonville Beach, Florida.
Consultants: Nelson B. Blocker, D. Eric Bradshaw.
Territory: Southeastern U. S.
Specialization: 3, 4, 6, 8, 12, 13, 15, 16, 17, 18. Also timber resource investigations; timberland management; timber and land sales; insurance company representative for loans on forest properties.

Southern Timber Management Service, Home Office, 205 S. 32nd St., Birmingham, Alabama; Branch Offices, 404 Montgomery Ave., Sheffield, Alabama; P. O. Box 964, Auburn, Alabama; P. O. Box 124, Lyons, Georgia and 224 Peach St., McComb, Mississippi.
Consultants: J. M. Bradley, H. E. Murphy, Dean Lloyd, Harry S. Larsen, Tom Newman, and Carl Struck.
Territory: South and Central Atlantic.
Specialization: 1, 2, 3, 4, 8, 10, 11, 12, 13, 15, 16, 17, 18. Also acting as land agent and forester in charge for private, commercial, and absentee-owned timberlands of all sizes with optional complete timber stand improvement cutting, milling, and T.S.I. operations as a service under contract. Contracted objectives under long range management contracts offered.

Frank Spearey, Consulting Forester, Licensed State Land Surveyor, P. O. Box 1249, Jacksonville, Texas. Branch office, Rusk, Texas, George K. Goldsberry in charge.
Territory: Gulf States.
Specialization: 4, 15, 16, 17. All phases of land management.

Wallace R. Stacy, Consulting Forester, Box 21, Walterboro, South Carolina.
Territory: Within 100 miles of Walterboro.
Specialization: 3, 4, 6, 7, 13, 16, 17, 18. Also growth studies, timber marking, fire damage appraisals, forest mapping, timber trespass appraisals, pulpwood and timber sales, timberland agent for absentee timberland owners.

T. J. Starker and Son, 3755 Van Buren Street, Corvallis, Oregon.
Operating consultants: T. J. Starker, Bruce Starker.
Territory: Oregon.
Specialization: 1, 3, 4, 10, 16, 19, 21.

J. F. Stauss, Consulting Forester, 9 Nowlan Road, Hillcrest, Binghamton, New York.
Territory: Northeast and Canada.
Specialization: 2, 3, 4, 8, 10, 11, 13, 15, 16, 17, 18. Also marketing and other forest products; litigation and damage claims.

Fred Stell, Consulting Forester, P.O. Box 42, Glenwood Springs, Colorado.
Territory: Colorado, Wyoming, New Mexico.
Specialization: 4, 6, 9, 14, 15, 16, 17, 18.

Raymond E. Stevens, Consulting Forester, 4416 McCulloch Street, Duluth 4, Minnesota.
Territory: Northern parts of Minnesota, Wisconsin.
Specialization: 4, 15, 16, 17, 18. Also field investigation and forest litigation.

John W. Stock, Consulting Forester and Licensed Land Surveyor, Tupper Lake, New York.
Territory: Adirondack Mountains.
Specialization: 3, 4, 10, 15, 16.

Edward Stuart, Jr., Operating and Consulting Forester, Avalon, Virginia and Hertford, North Carolina.
Territory: Eastern U. S.
Specialization: 2, 3, 4, 10, 11, 13, 14, 15, 16, 17, 18. Also investigations and arbitration of claims; operational management in manufacturing and marketing of forest products.

W. W. Talbert, Forest Consultant, 1112 Union Road, Lufkin, Texas.
Territory: Texas and surrounding states.
Specialization: 4, 6, 16, 17, 18.

Richard L. Templin, Jr., Consulting Logging Engineer and Forester, 1004 N. W. Hawthorne, Grants Pass, Oregon.
Territory: Oregon and northern California.
Specialization: 2, 4, 10, 15, 16, 17.

Texas Pine, Inc., Box 348, Conroe, Texas.
Forester: Stuart F. Clark.
Territory: Texas and southern U. S.

Tillinghast & Reed, Consulting Foresters, Madison, West Virginia.
Consultants: John Tillinghast, Marvin Reed, Robert Keiling.
Territory: West Virginia, eastern Kentucky, western Virginia.
Specialization: 3, 4, 6, 15, 16, 17, 18, 19, 20. Timberlands in coal producing areas a specialty; services available on job basis or on annual retainer fee basis. Also dealers in Homelite chain saws, McCulloch chain saws. Distributors Oregon Saw Chain equipment.

Timber Management Service, 821 Spring Street, Klamath Falls, Oregon.
Consultants: John E. Hall and Robert W. Mezger.
Territory: Ponderosa pine region.
Specialization: 2, 3, 4, 6, 8, 15, 16, 17, 18.

J. M. Tinker, Registered Forester, P. O. Box 298, Statesboro, Georgia.
Territory: Southeastern Georgia.
Specialization: Timber cruising.

Anton J. Tomasek, 1828 Lincoln, Des Plaines, Illinois.
Territory: Illinois, Indiana, Michigan, and Wisconsin.
Specialization. 3, 4, 9, 11, 16, 18. Also tree diseases and insects, forest recreational development.

Tree Farm Management Service, 364 East Broadway, Eugene, Oregon.
Consultants: Verne D. Bronson, Chief Forester, Robert G. Kintigh, Morris J. Anderson, John W. Davis, and Lyle H. Seymour.
Territory: Oregon and Washington.
Specialization: 3, 4, 5, 6, 7, 8, 15, 16, 17, 18. Complete tree farm management, inventory and special studies of forest lands, salvage harvest supervision, forestry research, aerial photo procurement and interpretation.

Henry H. Tryon, Consulting Forester, retired. 258 Mountain Road, Cornwall-on-Hudson, New York.
Specialization: Sprout hardwoods.

William H. Utley, P. O. Box 645, New Bern, North Carolina.
Territory: North Carolina.
Specialization: 4, 15, 16. Also industrial investigations, tax evaluations—public and private.

John C. Van Camp, Jr., Consulting Forester, 2028 Hawthorne Drive, Rockford 115, Illinois.
Territory: Northern Illinois, southern Wisconsin.
Specialization: 4, 5, 6, 7, 15, 16, 17, 18. Also farm and estate forestry, litigation and damage claims, landscaping.

James M. Vardaman & Company, First National Bank Bldg., Laurel, Mississippi.
Consultant: James M. Vardaman.
Territory: Mississippi, southern Alabama, eastern Louisiana.
Specialization: 16, 17. Also own and operate medium-sized tree farm.

Wall and Larson, Foresters, 2508 J Street, Sacramento, California.
Territory: Western states.
Specialization: 2, 3, 4, 6, 7, 8, 10, 11, 15, 16, 17, 18. Also licensed surveying; aerial photo interpre-

tation; land and timber sales and supervision; land valuation and appraisal; log scaling service.

Robert D. Washburn, Forestry Consultant, Route 1, Box 461, Marquette, Michigan.
Territory: Upper Michigan and the Lake states.
Specialization: 2, 4, 10, 15, 16, 17. Also land appraisal. Registered surveyor, State of Michigan.

Arthur J. Weinheimer, Consulting Forester, R.F.D. #1, Old Chatham, New York.
Territory: Eastern New York.
Specialization: 4, 18.

Edward H. Werner, Consulting Forest Engineer, 3122 H Street, Sacramento, California.
Territory: California.
Specialization: 3, 4, 10, 16. Also timber and log buyer, logging inspector and personal representative for buyers and sellers of timber and range lands.

Western Timber Services, Arcata Hotel, Arcata, California.
Consultant: Robert E. Kleiner.
Territory: Not restricted.
Specialization: 2, 4, 8, 10, 15, 16, 17, 18.

J. Atwood Whitman, Consulting Forester, Glendon, North Carolina. Branch office at Warsaw, North Carolina.
Territory: Eastern and southern United States.
Specialization: 2, 3, 4, 8, 15, 16, 17, 18. Also forest damage appraisal, forest litigation, growth analysis, timber type maps and municipal forestry.

S. A. Wilde, Soils Department, University of Wisconsin, Madison 6, Wisconsin.
Territory: Wisconsin, Minnesota, Michigan, Missouri, Illinois, Indiana, Ohio.
Specialization: 18. Including survey of forest tracts, selection of planting sites, management of forest nursery soils.

Richard E. Wilson, 11½ Fifth Ave., Saratoga Springs, New York.
Territory: Not restricted.
Specialization: 18. Establishment and care of plantations.

S. Leigh Wilson, Consulting Forester, 857 Congaree Drive, Florence, South Carolina.
Specialization: 3, 4, 16, 17, 18.

Paul T. Winslow, Consulting Forester, Staatsburg, Dutchess County, New York.
Territory: Northeast.
Specialization: 1, 3, 4, 11, 15, 16, 17, 18.

K. B. Wood and Associates, Inc., 2623 N.W. Industrial Street, Portland 10, Oregon.
Territory: National.
Specialization: 2, 10, 15, 16, and 17.

Woodland Managers, P. O. Box 542, Lake City, Florida.
Consultants: Philip J. Moses, General Manager, K. R. Swinford, E. W. Gemmer.
Territory: Southeastern United States.
Specialization: Aerial photo interpretation, cruising, damage appraisal, forest management planning, forest maps, growth and yield computations, land surveying, land valuation, tree marking, timber marketing, tree planting, insect problems.

J. E. Woodman, Barnett Bank Building, Jacksonville 2, Florida.
Territory: Eastern United States and Canada.
Specialization: 3, 4, 8, 12, 13, 16, 18.

Herman Work, 1005 Selma Blvd., Staunton, Virginia.
Territory: General.
Specialization: 2, 3, 4, 6, 11, 13, 16. Especially qualified in economics of pulpwood and use of leftovers for pulping.

Robert E. Worthington, Consulting Forester, Quilcene, Washington.
Territory: Olympic Peninsula.
Specialization: 2, 10, 15, 16, 17. Also registered professional engineer and land surveyor.

James G. Yoho, Consulting Forester, 613 High Street, Brownsville, Pennsylvania.
Territory: Eastern United States.
Specialization: 2, 8, 11, 16, 17. Appointments by mail preferred.

Lawrence W. Zach, Consulting Forester, Route 2, Box 281, Woodburn, Oregon.
Territory. Western Oregon.
Specialization: 4, 15, 16, 17.

E. A. Ziegler, Consulting Forester, College Park, Lewisburg, Pennsylvania.
Territory: Middle Atlantic States and Southeastern States to and including Florida.
Specialization: 2, 3, 4, 6, 8, 12, 13, 15, 16, 17, 18.

The Society of American Foresters

The Society of American Foresters is a professional organization of technically trained foresters. It is a democratic, nonpolitical, nonprofit association of 11,000 members.

As stated in its Constitution, the objects of the Society are to represent, advance, and protect the interests and standards of the profession of forestry, to provide a medium for exchange of professional thought, and to promote the science, practice, and standards of forestry in America.

Membership in the Society of American Foresters is recognition of a man's professional abilities and attainments. No person can acquire such recognition if it is not deserved.

The Society is governed by a president, vice president, and nine other Council members. Policies established by the Council are translated into action programs which are administered by the executive secretary whose office is in the Mills Building, Washington, D. C.

An annual meeting of the Society includes technical sessions arranged by the eleven Divisions which specialize in forest management, silviculture, private forestry, forest economics, forest products, forest recreation, forest wildlife management, range management, watershed management, public relations, and education. Other features of the meeting include sessions on general topics and a joint conference of the Council and Section delegates.

Sections are regional units of the Society. The United States, its territories, and Canada are divided into 21 Sections which elect their own officers, hold meetings, and conduct appropriate projects and activities. Many Sections have subsidiary units called Chapters which hold informal meetings and field trips to acquaint foresters with each other and with local forestry matters.

The JOURNAL OF FORESTRY is a monthly publication of the Society; *Forest Science* is a quarterly. Books published include *Forestry and Related Research in North America*, *Forestry Handbook*, *Forest Cover Types of North America*, and others.

Through its publications and meetings the Society provides a medium for the exchange of professional information and promotes cooperation among foresters and with those in allied fields.

By encouraging its members to promote the adoption, use, and improvement of forestry practices, the Society endeavors to extend the benefits of good forestry practices to all timberland owners and users of forest products.

Through the operation of committees, by the functioning of Chapters, Sections, Divisions, and the Council, and by expressions of the membership through referendums, the Society helps establish the policies and standards to be observed by professional foresters.

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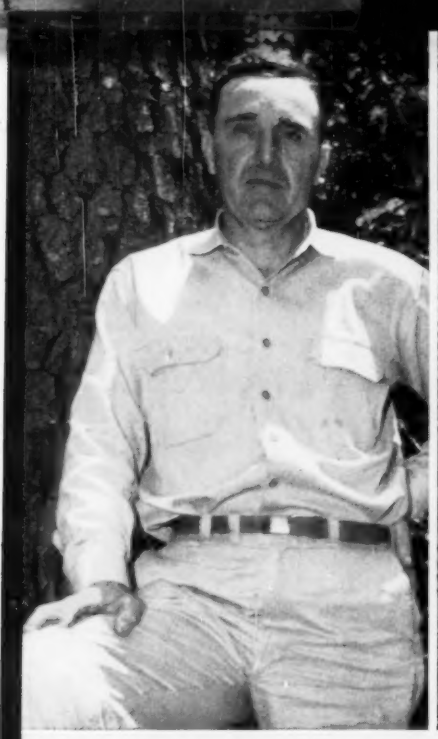

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